PG&E 2004-05 Local Government Partnership Programs

1350-04 Bakersfield / Kern Energy Watch

1226-04 East Bay Energy Partnership

1214-04 El Dorado County

1205-04 City of Fresno

1207-04 Silicon Valley Energy Partnership

1215-04 City of Stockton

Study ID #PGE0239.01

Final Report

Volume 1 of 1

December 12, 2006

Prepared for the California Public Utilities Commission and Pacific Gas and Electric

Funded with California Public Goods Charge Energy Efficiency Funds

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Acknowledgements

This report was prepared by ECONorthwest's Portland office for the California Public Utilities Commission (CPUC) and Pacific Gas and Electric. Dr. Stephen Grover was the ECONorthwest project manager for this evaluation and is the primary author of this report. Questions regarding the report should be directed to him at grover@portland.econw.com or by phoning the Portland office at (503) 222-6060. Dr. Grover was assisted in this project by Peter Graven, Jonny Holz, Ian McBane, and John Boroski. SBW, Inc. assisted with the engineering review of savings calculations. Freeman Sullivan fielded the participant surveys and conducted the on-site audits.

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EXECUTIVE SUMMARY

The 2004-05 PG&E Local Government Partnership (LGP) programs are designed to reduce energy use by providing energy efficiency information and direct installation of energy efficient equipment to targeted local communities. The Partnerships offer some combination of program elements such as direct install services to Hard-to-Reach Customers, and small businesses; free energy audits to both residential and nonresidential Hard-to-Reach Customers; marketing and outreach to encourage participation in statewide energy efficiency programs; municipal building energy efficiency retrofits; commercial/industrial energy efficiency retrofits; new construction energy efficiency design and installation assistance; support for codes and standards enforcement; and local training seminars for residential contractors as well as design/build firms and engineers and architects working on commercial properties.

The individual partnerships covered in this evaluation include:[1]

- Bakersfield/Kern Energy Watch Partnership (BK)
- City of Fresno (FRE)
- City of Stockton (STK)
- East Bay Energy Partnership (EBAY)
- El Dorado County (EDOR)
- Silicon Valley Energy Partnership (SVEP)

ECONorthwest – along with Freeman Sullivan and SBW Consulting – conducted the evaluation for these Partnerships for the 2004-05 program years. Major data collection and analysis activities in this evaluation include:

- Participant phone surveys
- On-site audits to verify installations
- Review of savings values
- In-depth interviews of Partnership staff
- Process evaluation of program delivery
- Self-Reported Free ridership analysis

[1] The West Sacramento Partnership was originally planned to be covered in this evaluation but did not have any significant program activity. The resources originally allocated for West Sacramento were used to supplement the evaluation effort for the remaining six Partnerships.

The remainder of this report is organized as follows. The *Evaluation Methods Overview* section provides a general description of the analysis methods used to evaluate each of the Partnerships. Following this is a *Summary of General Evaluation Findings*, which provides a discussion of important findings that relate to all of the Partnerships. The subsequent chapters present the individual evaluation results for each Partnership. Each Partnership chapter contains phone survey results, verification results, self-reported free ridership, and *ex post* realized net impacts for the Partnership. Each Partnership chapter also presents evaluation conclusions and recommendations for program modifications.

The evaluation methods used for each Partnership are the same and consequently the individual Partnership chapters are very similar in structure and language. This leads to some unavoidable redundancies in text, but we assume that some readers will only read findings for selected Partnerships. With this in mind, many of the same conclusions and recommendations are repeated across chapters where appropriate.

EVALUATION METHODS OVERVIEW

The 2004-2005 LGP evaluation has three primary objectives:

- **Measure and Verify Energy Savings.** The evaluation verified the gross *ex ante* energy savings and gross *ex ante* demand reductions claimed by the program by conducting a thorough review of participant records and the program-tracking database. In addition, the key components of the savings calculations were reviewed and revised to provide net *ex post* energy savings consistent with the CPUC's reporting instructions. Specific tasks reviewing the measure level savings, reviewing assumptions regarding operating hours and measure life, and conducting a Self-Reported Free ridership analysis that was used to produce net realization rates and report savings consistent with the CPUC's reporting requirements.

- **Process Evaluation.** The second objective was to evaluate the program implementation process. This was done through interviews with Partnership staff and the implementation contractor in addition to phone surveys of participating customers. To assess the effectiveness of the program delivery, we developed the underlying program theory and designed survey questions to test the validity of the key program assumptions.

- **Measure Customer Satisfaction and Program Influence.** Through the data collection process, the evaluation identified LGP strengths so that these can be emphasized in future program years. In addition, the evaluation also looked for areas where the program delivery could be improved so that the LGP programs can be refined in future years to better meet the needs of the target population.

Included below is a brief summary of how the evaluation plan addresses the CPUC evaluation objectives.

Commission EM&V Objectives

1. Measuring level of energy and peak demand savings achieved. *The evaluation reviewed and adjusted as needed the assumed energy and demand impact values used for each Partnership. The self-report free ridership analysis and verification data are also used to calculate the realized net program impacts for each Partnership.*

2. Measuring cost-effectiveness. *The net realized savings values developed from the evaluation are used directly in the cost-effectiveness calculations performed for each Partnership as part of the program portfolio analysis.*

3. Providing up-front market assessments and baseline analysis, especially for new programs. *The participant phone surveys provided some market assessment information for this program in terms of participant makeup (demographics and firmographics) and baseline efficiency activities (free ridership analysis).*

4. Providing ongoing feedback, and corrective and constructive guidance regarding the implementation of programs. *An interim evaluation report was delivered to the Partnerships in October 2005 that contained the initial survey results and free ridership analysis. The evaluation provided additional information to the Partnerships through a series of in-person presentations to review evaluation results. The Evaluation also assisted in program planning by developing the draft logic models and program theory for each Partnership.*

5. Measuring indicators of the effectiveness of specific programs, including testing of the assumptions that underlie the program theory and approach. *The process evaluation – particularly the participant surveys – was designed to gather information to test the validity of the underlying program assumptions*

6. Assessing the overall levels of performance and success of programs. *The process evaluation, savings review and verification, and portfolio analysis were all designed to measure the overall success of the program, both in terms of delivering energy savings and creating satisfied program participants.*

7. Informing decisions regarding compensation and final payments. *This evaluation provides net realized savings estimates for each Partnership that will inform any decisions regarding the cost-effectiveness of current incentive levels.*

8. Helping to assess whether there is a continuing need for the program. *For each Partnership, a recommendation is made on whether or not the Partnership should continue based on the evaluation findings.*

PARTNERSHIP PROGRAM THEORY

To develop the participant survey instrument, we interviewed LGP program staff to obtain information on program theory and important implementation issues that should be addressed by the evaluation. During these interviews, we were able to identify the following key assumptions underlying the Partnership programs:

- The small businesses targeted by the Partnerships typically do not participate in other efficiency programs such as Express Efficiency. These other programs usually provide financial incentives for efficiency measures but require customers to pay part of the installation cost.

- Many small businesses rent their buildings and these customers have generally been more difficult to reach with energy conservation programs. Renters may not be making the decisions relating to energy use and equipment installations on the premises. In addition, renters may not anticipate remaining at the same location long enough to benefit from energy efficiency investments. General barriers such as lack of financing or concerns about actual bill savings also tend to be greater for renters than with building owners.

- Cost for installing energy efficiency technologies is prohibitive for these customers and therefore the program measures need to be provided at no cost to the customer.

- For the reasons listed above, these customers tend to be less aware of the energy efficient measures they can install to reduce their energy use.

- Non-English speakers comprise a significant part of the target population, which may pose an additional barrier to participation.

- Customers are sometimes suspicious of the types of assistance offered by the Partnership programs and therefore both utility and local government sponsorship is important for gaining customer trust.

From these program theory elements, the participant survey was developed to collect information on the following key issues:

- Awareness of other efficiency programs available to the customer

- The importance of utility and local government sponsorship of the Partnership

- The degree that the program is able to successfully recruit businesses that rent rather than own their building

- Customer plans to install measures in absence of the program

- The share of customers that speak languages other than English

The telephone surveys were designed to address the test the key elements of the program theory discussed above.

Based on the evaluation results, the following conclusions were drawn that were common to all of the Partnerships:

CONCLUSIONS AND RECOMMENDATIONS

From the analysis presented above, the following conclusions are drawn for the Bakersfield / Kern Partnership:

- **Reporting requirements must include contact information.** As discussed below, Partnerships are not required to submit participant contact information. This has made phone surveys and on-site verification difficult as we can only contact a portion of the customers for each Partnership.

- **Participant satisfaction is high.** For all the Partnerships, customers we surveyed were generally pleased with their program experience and gave high satisfaction ratings to the program overall and to individual program elements discussed during the phone survey.

- **The Partnership has been generally successful in reaching its target customer groups.** As shown in the survey results, the Partnership has been successful in reaching a significant amount of renters, low-income households, small businesses and non-English customer groups. These findings help support the program theory that the current program design is an effective way to recruit these traditionally hard-to-reach customer groups.

- **Both PG&E and local government sponsorship are considered important.** Participants overwhelmingly agreed that PG&E and local government sponsorship were important. For residential participants, 79 to 87 percent rated PG&E sponsorship as "Very Important," while 68 to 81 percent gave the same rating to local government sponsorship. Similarly, 68 to 81 percent of the commercial participants gave a "Very Important" rating to PG&E sponsorship and 52 to 70 percent gave the same rating to local government involvement.

- **Renters may have more influence over building energy decisions than originally assumed.** While many of the participants rent their homes or businesses, they still have a high level of control over the equipment decisions at the facility. A majority of renters strongly disagreed with the statement that it was not worth investing in energy efficiency because they did not own the building. Most of these renters also indicated that they did not need to get the building owner's consent prior to making improvements to the building.

- **Participants still have very low awareness of other energy efficiency programs.** The vast majority of participants are unaware of other energy efficiency programs. Of those that are aware, very few recalled having programs recommended to them by the Partnership staff they interacted with. This indicates that Partnership efforts to funnel participants to other programs have had little or no effect.

- **Self-reported free ridership rates are slightly higher than rates currently used**. The survey questions used to estimate free ridership typically resulted in values that were higher than what is currently assumed for these programs.

Based on these conclusions, we offer the following recommendations that are common to all of the Partnerships:

- **Continue with the current program implementation method.** The process evaluation showed that the key elements of the program theory were supported through the existing program delivery method. Customer satisfaction is also high for all program elements. As long as this can be maintained and cost-effective net savings are achieved, we see no reason why the current program design should be modified except as indicated in the other evaluation recommendations presented in this report.

- **Commercial operating hour assumptions need to be revised for T8/T5s and CFLs.** The current assumptions for annual operating hours are much higher than those found in comparable studies using on-site audit data and logger data for similar small business customers. Correcting for the operating hours substantially lowers the net *ex post* kWh and kW impacts for these measures in the commercial sector.

- **A separate study should be conducted to revise the operating hour assumptions used in the DEER database for small businesses.** A review of the DEER database revealed that in general the operating hours assigned for small businesses for T8/T5s and CFLs are higher than what has been observed for small business customers in this and other evaluation studies. However, the DEER database also delineates operating hours by business type and there is significant variation in operating hours across business categories. There was not a large enough sample of on-sites in this evaluation to produce separate operating hour estimates for each of the business types currently supported in the DEER database. We recommend a separate study be conducted to address this issue, as it appears that the current operating hour assumptions are generally too high for small business customers for T8/T5s and CFLs.

- **Require that full contact information be required for program tracking.** Currently, PG&E does not require that full contact information be reported for its Partnership, which hampered the evaluation and led to a more costly survey effort than originally planned. We strongly recommend that complete contact information (contact name, address, phone number) become a reporting requirement for each Partnership.

- **Improve program referral methods.** If referral to other efficiency programs is to remain a criterion for this Partnership, then the referral methods need to be improved. Possibilities for increasing program awareness include leaving program informational materials with customers, providing a checklist of other measures that could be replaced with a list of related programs, and follow-up phone calls from other programs to recruit these customers for additional measure installations.

1. INTRODUCTION

The 2004-05 PG&E Local Government Partnership (LGP) programs are designed to reduce energy use by providing energy efficiency information and direct installation of energy efficient equipment to targeted local communities. The Partnerships offer some combination of program elements such as direct install services to Hard-to-Reach Customers, and small businesses; free energy audits to both residential and nonresidential Hard-to-Reach Customers; marketing and outreach to encourage participation in statewide energy efficiency programs; municipal building energy efficiency retrofits; commercial/industrial energy efficiency retrofits; new construction energy efficiency design and installation assistance; support for codes and standards enforcement; and local training seminars for residential contractors as well as design/build firms and engineers and architects working on commercial properties.

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The evaluation was conducted in two stages. The first stage was primarily process oriented and was designed to provide feedback to the program while it is still being implemented. The major evaluation tasks for this phase included completing approximately 75 percent of the scheduled participant surveys (2,400 total) and on-site audits (300 audits). These results were presented to

PG&E in an Interim Evaluation Report in October 2005 as well as to some of the Partnerships through in-person presentations. The second evaluation phase included the remaining phone surveys and on-site audits. The second phase also included an analysis of the operating hours and EUL values for the major lighting measures covered by the program. The combined results from both evaluation phases are presented in this report.

The final evaluation tasks deviated slightly from those outlined in the original EM&V Plan approved by the CPUC for this evaluation. As discussed below, the resources that were originally allocated to West Sacramento (including those for the phone survey) were redistributed across other evaluation tasks for the other six Partnerships. This resulted in a final survey sample of 2,400 instead of the original 2,800. We also did less than the originally scheduled 70 in-depth interviews with Partnership staff as it quickly became apparent that fewer interviews would suffice and that these resources could be devoted more productively to other evaluation tasks. We were able to increase the number of on-sites from 300 to 326. We also assisted in more process-related activities that were not in the original EM&V but as the evaluation unfolded it became clear that more resources needed to be devoted to providing real-time feedback to the Partnerships. Additional tasks here included in-person presentations to the East Bay, Bakersfield, and Silicon Valley Partnerships to discuss the intermediate evaluation findings and reviewing savings calculation methods for selected gas measures for the East Bay Partnership. Finally, we worked with PG&E and developed logic models for each of the six Partnerships, which was also outside the scope of the original EM&V plan.

The phone surveys and on-site audits were completed by Freeman Sullivan using survey instruments developed by ECONorthwest. Participants were randomly selected from the different residential and commercial program components within each Partnership and the sample was not stratified. The survey took just under 20 minutes to complete, on average.

The first round of participant surveys was conducted in September and October of 2005 for both the residential and commercial components of each Partnership. The surveys were also used to recruit participants for the on-site audits. Approximately 75 percent of the phone surveys and on-site audits were completed in the fall of 2005, and the results were summarized in our Interim Evaluation Report. The remaining phone surveys and on-sites were completed by Freeman Sullivan in March and April of 2006.

In the process of fielding the participant survey, it was discovered that there are several significant data issues with how the Partnership programs are being tracked. The most critical of these problems is that the Partnerships are not required to submit contact information and phone numbers to PG&E for those participating in the program. This hampered our phone survey effort. Working with PG&E staff, we made several attempts to match participant data with phone numbers contained in PG&E's customer information system Cordaptix, but PG&E does not confirm the phone numbers in that database. As a result, when we began dialing for the survey we found that many of the phone numbers we received were invalid. When we fielded the second round of surveys, we were able to use contact information from PG&E's participant tracking database (MDSS), which had better (but still incomplete) contact information. Despite these problems, we do not believe that the lack of contact information seriously biased our survey results as it did not appear that the missing contact information was limited to any particular customer group.

Table 1 summarizes the participant data used for the evaluation surveys and reflects participation recorded in PG&E's participant tracking system. For the surveys, our initial allocation was 400 participant surveys per Partnership, which was eventually adjusted based on which Partnerships had samples available with adequate contact information. Within each Partnership, this was divided evenly between commercial and residential sectors. For those with multiple programs in each sector, the quotas were further divided across program elements based on current participation. For example, with East Bay residential programs, the quota of 200 was split between the Berkeley single-family direct install program (quota = 83) and the Oakland single-family direct install program (quota = 117).

As shown in Table 1, we were unable to obtain phone numbers for a significant portion of the participants in the tracking system. Overall, we were only able to match 81 percent of the sample overall phone numbers within PG&E's billing data system. As discussed above, as we fielded the survey we discovered that many of these numbers were inaccurate, which led to much lower completion rates for the survey than we had anticipated. We strongly urge PG&E to require that all Partnerships submit complete participant contact information (contact name, address, phone number, and business name where applicable).

We were able to complete 2,382 phone surveys for this evaluation, which was slightly below our original quota of 2,400. However, we were able to complete 326 on-site audits, which was 26 above our budgeted sample of 300.

Table 1: LGP Participant Survey Quotas and Sample Sizes

Quota #	Partnership / Program Element	Participants in PG&E Tracking System	# with phone numbers	% with phone numbers	Survey Quota	Survey Completes
1	EBAY/ Berkeley SF (Direct Install)	2805	2473	88%	83	85
3	EBAY/ Oakland SF (Direct Install)	612	576	94%	117	120
4	EBAY/ BEST (Direct Install)	704	700	99%	61	210
5	EBAY/ Senior Housing	42	41	98%	3	17
6	EBAY/ Smart Lights	438	429	98%	136	96
7	EDOR/ Small Biz – Good as Gold	347	343	99%	124	58
9	EDOR/ MF (Direct Install)	800	668	84%	139	140
10	EDOR/ SF (Direct Install)	469	372	79%	137	137
13	BK/ MF (Direct Install)	2190	1343	61%	88	220
14	BK/ SF (Direct Install)	2805	2473	88%	112	115
16	BK/ Small Biz (Direct Install)	371	366	99%	5	65
18	BK/ Small Biz Realtor (Direct Install)	2864	2446	85%	195	197
20	SVEP/ Small Biz	995	994	100%	343	161
22	FRE/ Small Biz (Direct Install)	1353	1348	100%	200	186
29	FRE/ MF (Direct Install)	412	252	61%	80	80
31	FRE/ SF (Direct Install)	968	837	86%	120	120
32	STK/ MF (Direct Install)	2365	1718	73%	159	159
33	STK/ SF (Direct Install)	923	793	86%	148	148
34	STK/ Small Biz Energy Cents	79	78	99%	36	9
39	STK/ Small Biz (Direct Install)	189	188	99%	114	59
	Total	**21,731**	**18,438**	**85%**	**2,400**	**2,382**

For the participant survey, we wanted to achieve a "90/10" relative precision level, meaning that for any particular question we would be 90 percent confident that the sample responses were within 10 percent of the true population value. For most of the Partnership components shown in Table 1, we were able to achieve a "90/10" level of precision under the most conservative sampling assumptions.

Finally, with any survey there is the potential for false response bias if the questions are not answered accurately. We have attempted to minimize this by using survey questions that have been tested in other evaluations as well as by pre-testing the participant survey. Nevertheless, the potential for bias exists for those questions where respondents may not accurately recall their program participation experience. An additional source of bias occurs when respondents intentionally give false information in order to provide responses that appear more socially

desirable (such as claiming that they will install energy efficiency equipment in the future due to the program).

Other than using survey questions that have been tested in other evaluations, we did not attempt to correct for any of these potential biases in the survey results. For some questions relating to free-ridership, we have asked a series of related questions that are designed to identify those respondents providing consistent responses, which should help reduce any response bias.

3. SUMMARY OF GENERAL EVALUATION FINDINGS

Some of the evaluation findings apply to all Partnerships and are discussed below. Additional detail on these issues is provided in the individual Partnership chapters and is used to develop recommendations for the each Partnership.

PARTICIPANT DATA

As discussed above, the Partnerships are not required to submit full participant contact information. This has made phone surveys and on-site verification difficult as we can only contact a portion of the customers for each Partnership. We strongly recommend that complete contact information become a reporting requirement for each Partnership.

In addition, for the commercial component of the East Bay Partnership, the current measure code categories used by PG&E do not cover many of the measures installed through the program. These measures are currently tracked in the PG&E database with general categories such as "Customized Lighting." With the more general categories, it was not possible for the evaluation to confirm which specific measures were installed and if the assigned savings values are accurate. We recommend that more measure-level be tracked by PG&E in the future for these types of installations.

Finally, we reviewed the per unit measure-level savings values used by PG&E and compared them with what was in the individual Program Implementation Plans (PIPs) and the CPUC monthly reporting workbooks. For the commercial measures, the final per unit savings values generally did not match with the values reported in the PIPs or the CPUC workbooks for any of the Partnerships. However, through conversations with PG&E database staff, we were able to examine a small sample of selected measures and determine that the savings values were being assigned appropriately using the same values for the Partnerships as were being used for the Statewide Express Efficiency and SPC programs.

OPERATING HOURS

Several recent evaluation studies have shown that the current assumed operating hours for CFLs and T8/T5 are likely too high for small business customers. Since the impacts assumed for the commercial Partnership components generally use either the Express Efficiency or DEER savings assumptions, the issue of operating hours being too high is relevant for these programs.

ECONorthwest recently completed an evaluation study of SDG&E's 2004-05 Small Business Energy Efficiency (SBEE) Program where the issue of lighting operating hours was examined

in-depth for small business customers. For the SBEE evaluation, the data from 100 on-site verification audits were used to estimate annual operating hours for both CFLs and T8/T5s for small commercial customers. Based on the on-site data, we developed operating hour estimates of 1,872 for CFLs and 2,572 for T8/T5s, which were used to develop the final net *ex post* kWh and kW impacts for the SBEE program.

In addition to the SBEE study, ECONorthwest is currently conducting an evaluation of SCE's Nonresidential Hard-to-Reach program, which is very similar to the SBEE program in that it provides direct installs of the same measures to small businesses. As part of the SCE evaluation, lighting loggers were installed at 25 sites to collect data on operating hours for small businesses participating in the program. The preliminary lighting logger results show operating hours of 1,941 for CFLs and 2,613 for T8/T5s, both of which are within 4 percent of the results found for the SBEE evaluation. Given the comparison of the SBEE evaluation results with other available studies, we place a high level of confidence on the operating hour results presented in the SBEE evaluation report for both T8/T5s and CFLs.[3]

An additional objective of the SBEE on-sites was to develop an estimate of the effective useful life (EUL) for CFLs installed under the program. As part of the on-sites conducted, the make and model of the CFLs installed was collected. These data allowed us to determine the manufacturer's rated lifetime for 51 sites and corresponded to the installation of 452 CFLs. The average manufacturer's rated life among these integral CFLs was 8,027 hours.[4] Based on the 1,872 annual hours of operation discussed above, this would equate to an estimated effective useful life of 4.3 years for integral CFLs, based on the manufacturer's rated lifetime.

It is important to note that because the EUL is a function of the annual operating hours, the EUL presented here could change significantly with different annual operating hour assumptions. If these results are to be used with a different annual operating hour assumption, the EUL should be set equal to 8,027 hours divided by the annual operating hours. For example, if 2,100 annual operating hours were used, then the resulting EUL would be 3.8 years.

The phone survey results for the Partnerships show an overall average annual operating hours of 3,359 for commercial participants, which is less than the operating hours currently assumed for commercial customers for the CFLs and T8/T5s *ex ante* impacts. Given that the Partnerships are targeting the same types of small businesses recruited by the SBEE and SCE programs, we believe that the installations are similar and that commercial Partnership participants will have operating hours similar to the SBEE and SCE programs for these same measures. Consequently, the same adjustment used in the SBEE evaluation is appropriate for the CFL and T8/T5 measures installed by commercial Partnership participants.

A comparison of the firmographic information between participants in the Partnerships, SBEE, and SCE programs is shown in Table 2. In addition to targeting the same small commercial

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[3] The final evaluation report *Evaluation of the SDG&E 2004-05 Small Energy Efficiency Program* is available at www.calmac.org.

[4] It is interesting to note that a recent evaluation of the Express Efficiency program found the average rated life to be 7,962 hours, based on 60 site installations. In addition, the current average rated lifetime for ENERGY STAR qualified CFLs is 8,000 hours. **Source:** ENERGY STAR website: http://estar6.energystar.gov/index.cfm?c=cfls.pr_crit_cfls.

customers and providing similar measures, these programs also have similar characteristics for important firmographic features such as building ownership, language, square footage, and number of employees. Based on these similarities across programs, we believe that it is appropriate to apply the operating hour adjustment from the SBEE evaluation to the Partnership impact results.

Table 2: Cross-Program Firmographic Comparison

Program	10 Employees or Less	5000 Square Feet or Less	Language Other Than English	Rent
Bakersfield / Kern	65	58	31	37
Fresno	85	60	53	58
Stockton	70	43	49	59
East Bay	78	72	38	79
El Dorado	55	50	29	31
Silicon Valley	82	73	52	77
SDG&E SBEE	83	83	46	82
SCE Non-Res HTR	85	76	70	71

Based on the results used in the SBEE evaluation, we have developed kWh impact adjustment factors based on the lower operating hours for both CFLs and T8/T5s for each Partnership. Using the operating hour information discussed above, the CFL *ex ante* impacts are adjusted down by a factor of 56 percent to determine realized impacts for each Partnership. Similarly, the T8/T5 *ex ante* impacts are adjusted downward by 42 percent. The overall effect of these adjustments on the final *ex post* net realized impacts is discussed in each of the Partnership chapters. Finally, the lower operating hours also results in a revised EUL of 4.2 years for CFLs installed in the commercial sector, and this lower EUL estimate is used to calculate the kWh and kW savings over time in the impact tables required by the CPUC.

PROGRAM STAFF INTERVIEW RESULTS

In order to meet the evaluation objective of evaluating the program implementation process, Freeman Sullivan reviewed program design materials and conducted in-depth interviews with management and implementation staff to develop an understanding, description, and schematic representation of each Partnership's portfolio of activities, and articulate the underlying program theory for each Partnership. Additionally, program staff throughout the implementation chain were interviewed to obtain detailed information on how well the Partnerships are operating. This effort sought to identify program strengths so that these can be emphasized in future program years. In addition, this task has also identified areas where program delivery needs improvement, as this information can be used to refine the program in future years to better meet the needs of the target population.

Interview personnel categories include PG&E Program Managers, PG&E Program staff, local government program leads and staff, implementation contractors, and vendors. PG&E Program

staff includes personnel in the energy efficiency department (e.g., project managers, marketing/communications, data), as well as those in other partnering departments like Account Services, Government Relations and News.) A total of 24 in-depth interviews have been conducted with key members of the seven Partnership management and implementation teams. Each interview lasted 1-1.5 hours, and the vast majority of these interviews were conducted in-person. Second round interviews will be conducted with additional program staff members and vendors later in this evaluation. Additional program details were collected during follow-up interviews and meetings with key Program Managers and Implementers.

The focus of these interviews was on the intricate details of program implementation and integration, both as initially planned and in practice as the Partnerships evolved. Objectives, goals and other issues related to the design and success of the program were also discussed.

Specific topic areas of interviews included:

- Program Structure (including Roles & Responsibilities)
- Program Purpose, Logic and Theory
- Program Coordination and Interactions
- Customer Satisfaction & Appeal
- Program Value
- Problems & Hurdles
- Tracking & Reporting
- Recommendations

Several key themes emerged from the in-depth interviews:

- **Program Overlap.** Most interviewees mentioned program overlap as a barrier to successful implementation. Most felt that unclear definition of roles and responsibilities, territory boundaries, incentive and goal allocation, and basically "who got what piece of the pie" led to unhealthy competition and caused confusion for customers. While this went largely unaddressed in this program cycle, there were some examples of solutions that worked as a stopgap. For example, the East Bay Partnership decided at the outset of the program to divide responsibilities by market sector and geographical area.

- **Customer Satisfaction.** Most interviewees reported that they felt customer satisfaction was generally high, and a number of programs had very high participation rates. Key drivers of customer satisfaction (as perceived by program staff) included financial incentives and energy bill savings. Additionally, some interviewees felt that customers appreciated that the utility was working in partnership with their local governments. Key drivers of customer dissatisfaction reported included difficulty of participation, confusion

about program offerings, and that services promised were not delivered (e.g., measures were delivered to a customer site but not installed.)

- **Program Branding.** While most interviewees were pleased with the overall design of marketing materials, many raised the issue of the difficulty of properly branding programs due to program overlap and the number of program "owners." They felt this led to "logo soup" and resulted in customer confusion. This was exacerbated by the relatively high number of energy efficiency program name changes and offerings in recent years.

- **Regulatory Reporting.** Almost all interviewed felt that the regulatory reporting requirements were overly burdensome and pulled resources away from more critical program implementation functions. Additionally, multiple tracking databases have the potential to cause tracking errors.

- **Time to Market.** Almost all interviewed noted that it took too long to get the programs in the field once they had been approved. Interviewees felt this was largely due to the contracting process. However, there were some mentions of difficulties in gaining agreement of all key decision makers on certain implementation details.

- **Program Inflexibility.** Additionally, many felt that regulatory and contracting processes made it too difficult and time consuming to "course correct" during the program run – if elements were not in the original program filing, it was virtually impossible to add or alter them mid-program, even if it would lead to enhanced program performance and increased customer satisfaction. It was suggested that there was a need for more flexibility to introduce innovation to program delivery, interaction, and program design.

- **Coordination & Communications.** While generally coordination and communications functioned fairly well among members of program element teams, there was some break-down communicating and coordinating across the program elements, and virtually no communications and coordination across Partnerships and limited interaction with other statewide programs and third-party initiatives. Some Partnership teams implemented regular in-person meetings and/or conference calls to keep their members better informed. The suggestion of a newsletter-like regular update was raised. The East Bay Partnership local government representatives used the statewide Local Government Commission (LGC) as a way to communicate with other member local governments about the Partnerships. It was suggested that coordination and decision-making need to happen through both groups like the LGC (as independent voice to drive policy decisions) and utilities (to drive practical implementation).

- **Program Consistency.** Several interviewees raised the issue of a need for consistency across partnerships especially related to measure costs (paying for installations, rebates). Similarly, several interviewees mentioned the need to keep program offerings/incentive levels consistent within a program over time.

- **Vendor Issues.** Some interviewees mentioned problems with program vendors who did not deliver services per their contracts. This was addressed by increased verification

measures. Additionally, some felt that the larger vendors who had past experience with PG&E programs had an unfair advantage in reserving program dollars, which led to limited participation by other, smaller market actors.

PARTNERSHIP PROGRAM THEORY

To develop the participant survey instrument, we interviewed LGP program staff to obtain information on program theory and important implementation issues that should be addressed by the evaluation. The following describes the general program theory of the LGP partnerships.

The local government partnership programs include a number of activities designed to produce outcomes that correspond with the CPUC's ultimate goals. These activities, listed below in Table 3, are grouped into three general categories: (1) Marketing, Outreach and Education; (2) Incentives, Direct Installation and Energy Services; and (3) Training. These activities primarily target mid-market and demand-side actors. Following the list of activities, specific outputs and anticipated short and longer term outcomes are presented. The short-term outcomes describe the expected transitional outcomes that are necessary to reach the programs' ultimate goals.

Table 3: Local Government Partnership Activities

Marketing and Outreach Activities
Coordination with Low Income Energy Efficiency (LIEE) and California Alternative Rates for Energy (CARE) programs to identify potential participants
Partner with local governments to establish partnerships that promote energy efficniency programs to customers that typically are not aware or do not participate in other energy efficiency programs
Partner with local planning and building organizations to identify potential commercial participants
Develop marketing and website material to promote the local government partnership programs to the targeted audiences
Door-to-door canvassing to recruit participants
Case studies
Referrals to other energy efficiency programs
Incentives, Direct Installs, Other Energy Services for end-Use Customers
Direct installs
Incentives for energy efficient measures
Provide energy audits
Energy use and financial management workshops for residential customers
Training to private building owners on financial packaging to incorporate EE into capital improvement projects
Provide design and construction management support
Training Activities for Mid-Market Actors
Title 24 training relating to improving compliance with building codes
Technical training seminars designed for building owners, designers, engineers, and architects

It is important to distinguish between outputs and outcomes. For the purposes of these tables, outputs are defined as the immediate results from specific program activities. These results are typically easily identified and quantified through counting and/or review of program records.

The following tables list the anticipated outputs (Table 4) and outcomes (Table 5). Outcomes are distinguished from outputs by their less direct (and often harder to quantify) results from specific program activities. Outcomes represent anticipated impacts associated with the local government partnerships program activities, and will vary depending on the time period being assessed. On a continuum, program activities will lead to immediate outputs that, if successful, will collectively work toward achievement of anticipated short and longer-term program outcomes.

Table 4: Local Government Partnership Program Outputs

Outputs - Marketing and Outreach
Partnerships established with LIEE and CARE program implementors in the local government partnership territories
Partnerships with local governments, planning organizations, and building organizations established
Potential participants identified
Marketing materials and website content created
Houses canvassed
Referrals made
Outputs - Incentives, Direct Installs, Other Energy Services
Free measures, financial incentives and audits available
Desigin and construction support available
Energy use and financial management workshops held
Training provided to building owners on financial packing to incorporate energy efficiency into capital improvement projects
Outputs - Training
Tital 24 and technical training seminars provided

Table 5: Local Government Partnership Program Outcomes

Outcomes: Short-Term
Local governments promote the partnerships
Increased awareness of the partnerships
Energy efficiency measures installed
Technical assistance provided during early stages of building processes
Referrals made to other energy efficiency programs
Increased participation in other energy efficiency programs resulting from referrals
kWh, kW, and therm savings
Outcomes: Longer-Term
Larger commerical projects completed
More efficient building stock
Increased awareness of energy efficiency, greater recognition of the benefits of investing in energy efficient technology
Increased demand for energy efficiency products and services
Increased availability of energy efficiency producs and servies
Market participants incorporate energy efficiency products and practices as standard practice
Sustained and equitable kWh, kW, and therm reductions

From out interviews with LGP program staff, review of program materials, and the resulting program theory that is described above, we were able to identify the following key assumptions underlying the Partnership programs:

- The small businesses targeted by the Partnerships typically do not participate in other efficiency programs such as Express Efficiency. These other programs usually provide financial incentives for efficiency measures but require customers to pay part of the installation cost.

- Many small businesses rent their buildings and these customers have generally been more difficult to reach with energy conservation programs. Renters may not be making the decisions relating to energy use and equipment installations on the premises. In addition, renters may not anticipate remaining at the same location long enough to benefit from energy efficiency investments. General barriers such as lack of financing or concerns about actual bill savings also tend to be greater for renters than building owners.

- Cost for installing energy efficiency technologies is prohibitive for these customers and therefore the program measures need to be provided at no cost to the customer.

- For the reasons listed above, these customers tend to be less aware of the energy efficient measures they can install to reduce their energy use.

- Non-English speakers comprise a significant part of the target population, which may pose an additional barrier to participation.

- Customers are sometimes suspicious of the types of assistance offered by the Partnership programs and therefore both utility and local government sponsorship is important for gaining customer trust.

From these program theory elements, the participant survey was developed to collect information on the following key issues:

- Awareness of other efficiency programs available to the customer
- The importance of utility and local government sponsorship of the Partnership
- The degree that the program is able to successfully recruit businesses that rent rather than own their building
- Customer plans to install measures in absence of the program
- The share of customers that speak languages other than English

The degree to which the local government-PG&E partnership model is able to address these barriers is summarized below using selected survey results. Additional detail on these issues is presented in the individual Partnership chapters.

Most of the Partnerships target low or moderate-income households, and Table 6 shows the share of residential participants that fall in these categories based on the phone survey responses. Over half of the residential Partnership participants have annual household incomes of $20,000 or less. The high share of low-income participants is likely due to the close relationship of the Partnerships with the California Alternative Rates for Energy (CARE) and Low Income Energy Efficiency (LIEE) programs in identifying candidate participants.

Table 6: Household Income

Partnership	$20,000 or less	$20,000-$50,000
Bakersfield / Kern	51%	29%
Fresno	58	23
Stockton	60	20
East Bay	48	26
El Dorado	54	27

The Partnerships have also been targeting non-English speaking households, which has traditionally been considered a hard-to-reach customer segment. As shown in Table 7, the Partnerships are able to reach a significant amount of Spanish speaking households, particularly with the Bakersfield / Kern and Fresno Partnerships.

Table 7: Primary Language (Residential Participants)

Partnership	English	Spanish	Other
Bakersfield / Kern	75%	23%	2%
Fresno	67	27	6
Stockton	79	18	3
East Bay	93	6	1
El Dorado	94	4	2

Rental customers – both in the residential and commercial sectors- are also considered a hard-to-reach customer segment and are target customers for the Partnerships. As shown in Table 8, each of the Partnerships has been successful in recruiting a high level of rental customers for its programs.

Table 8: Rentals and Ownership

Partnership	Own	Rent
Bakersfield / Kern – Residential	62%	37%
Bakersfield / Kern – Commercial	52	37
Fresno – Residential	63	37
Fresno – Commercial	42	58
Stockton – Residential	64	34
Stockton – Commercial	41	59
East Bay – Residential	87	12
East Bay – Commercial	19	79
El Dorado - Residential	43	57
El Dorado – Commercial	67	31
Silicon Valley - Commercial	21	77

One of the key tenets of the program theory is that there are benefits to having joint sponsorship of the program from both PG&E and local government. The results shown in Table 9 support this program theory element, as all of the customer groups placed a very high importance on both utility and government sponsorship. Across Partnerships, commercial customers tended to place slightly less importance on local government sponsorship than sponsorship by PG&E. Residential importance ratings were also higher than commercial ratings for both PG&E and local government sponsorship.

Table 9: Importance of Sponsorship

Partnership	Local Government Sponsorship "Very Important"	PG&E Sponsorship "Very Important"
Bakersfield / Kern – Residential	77%	81%
Bakersfield / Kern – Commercial	52	68
Fresno – Residential	80	87
Fresno – Commercial	70	81
Stockton – Residential	81	87
Stockton – Commercial	56	79
East Bay – Residential	80	86
East Bay – Commercial	54	68
El Dorado - Residential	68	79
El Dorado – Commercial	52	71
Silicon Valley - Commercial	67	80

The customers targeted by the Partnerships have traditionally been unaware of their energy efficiency program options. The survey results shown in Table 10 support this assumption, as the vast majority of Partnership participants are unaware of other programs. While this supports the program theory, the Partnerships are supposed to be providing referrals to other programs. The continued low levels of awareness indicate that these referral methods have been generally ineffective in increasing awareness.

Table 10: Awareness of Other Efficiency Programs

Partnership	Aware of Other Energy Efficiency Programs	Unaware of Other Energy Efficiency Programs
Bakersfield / Kern – Residential	16%	84%
Bakersfield / Kern – Commercial	11	89
Fresno – Residential	18	82
Fresno – Commercial	11	89
Stockton – Residential	11	89
Stockton – Commercial	12	88
East Bay – Residential	13	87
East Bay – Commercial	15	85
El Dorado - Residential	18	82
El Dorado – Commercial	24	76
Silicon Valley - Commercial	13	87

Finally, the validity of the underlying program theory will be reflected in part by the satisfaction of the program participants. As shown in Table 11, all of the Partnership customer groups were very satisfied with their Partnership experience.

Table 11: Overall Partnership Satisfaction

Partnership	Average Rating (10 Point Scale)
Bakersfield / Kern – Residential	8.9
Bakersfield / Kern – Commercial	8.5
Fresno – Residential	9.0
Fresno – Commercial	8.9
Stockton – Residential	9.0
Stockton – Commercial	8.8
East Bay – Residential	8.8
East Bay – Commercial	8.7
El Dorado - Residential	9.0
El Dorado – Commercial	8.7
Silicon Valley - Commercial	8.4

As the preceding results indicate, the local government-PG&E partnership model has been generally successful in reaching the targeted customer groups, and consequently supports the underlying program theory.

The following charts and tables present overall performance measures of each partnership. As shown in Figure 1 and Figure 2, the majority of the kWh and kW savings from each partnership (with the exception of Bakersfield / Kern County) came from the commercial sector.

Figure 3 and Figure 4 provide a comparison of the *ex ante* net impacts, the evaluation *ex post* net impacts, and the program goals for each Partnership. With the exception of Fresno and Stockton, all of the Partnerships have sufficient participation to meet their kWh goals using the *ex ante* impact values. With the *ex post* evaluation impacts, however, only the El Dorado Partnership meets its kWh goal. The situation is somewhat better with kW impacts as El Dorado, East Bay, and Silicon Valley all meet their kW goals using the *ex post* net impact numbers. As discussed in detail in this report, the low *ex post* impact values are primarily due to the operating hour adjustment and self-reported free ridership values that are higher than those used in the *ex ante* net impact calculations.

Figure 1: Net kWh Savings by Partnership and Segment

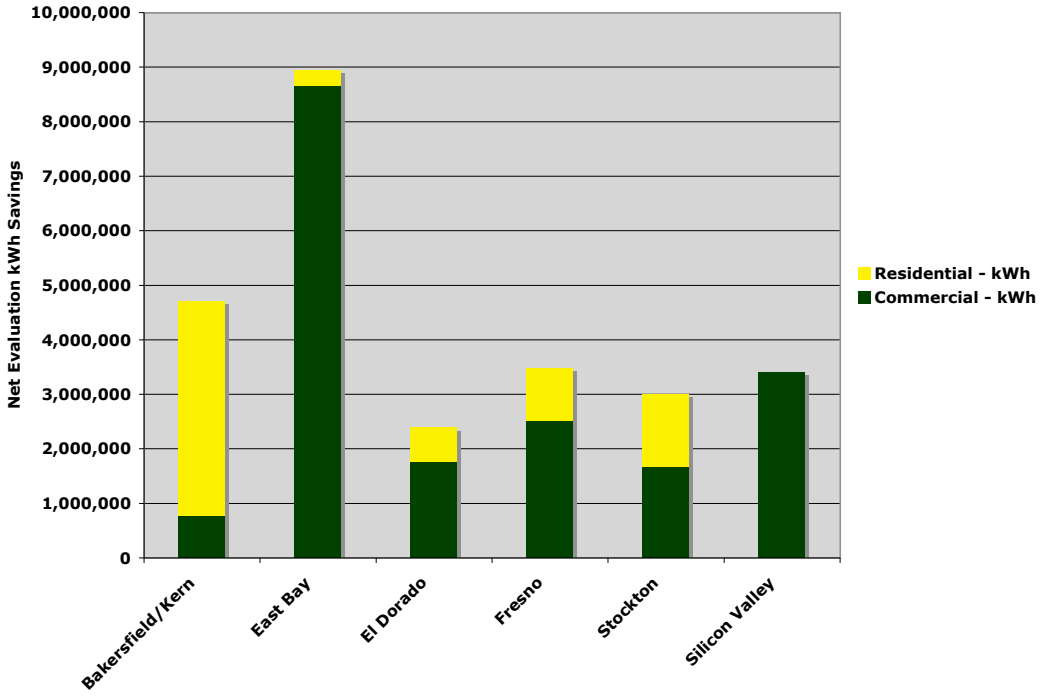


Figure 2: Net kW Savings by Partnership and Segment

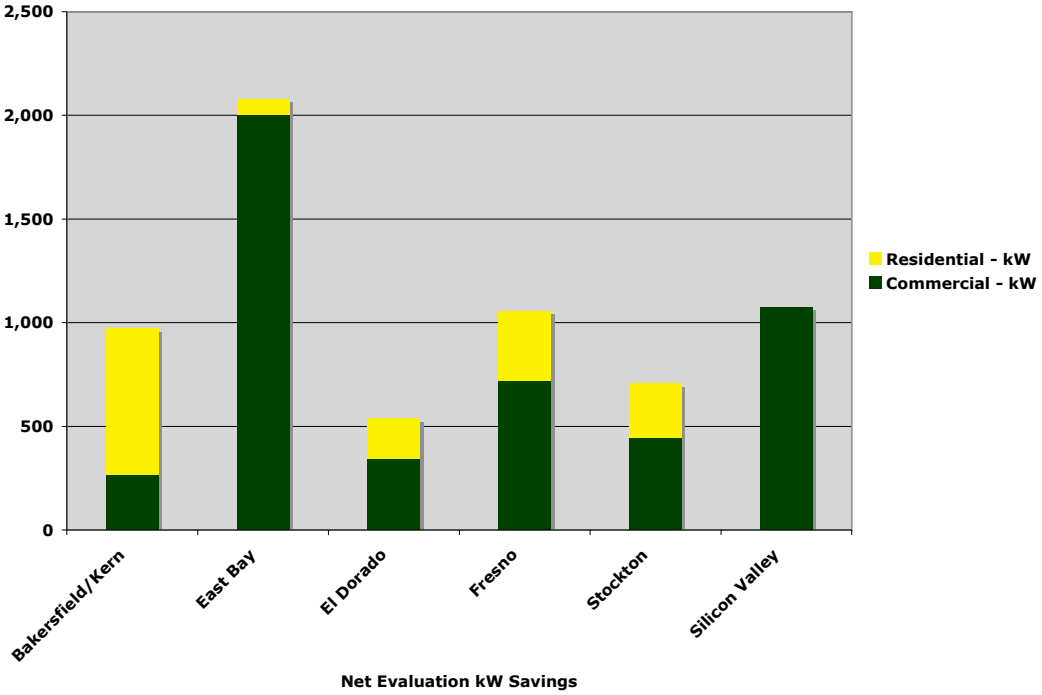


Figure 3: Comparison of Evaluation Net kWh Savings with Program Goals

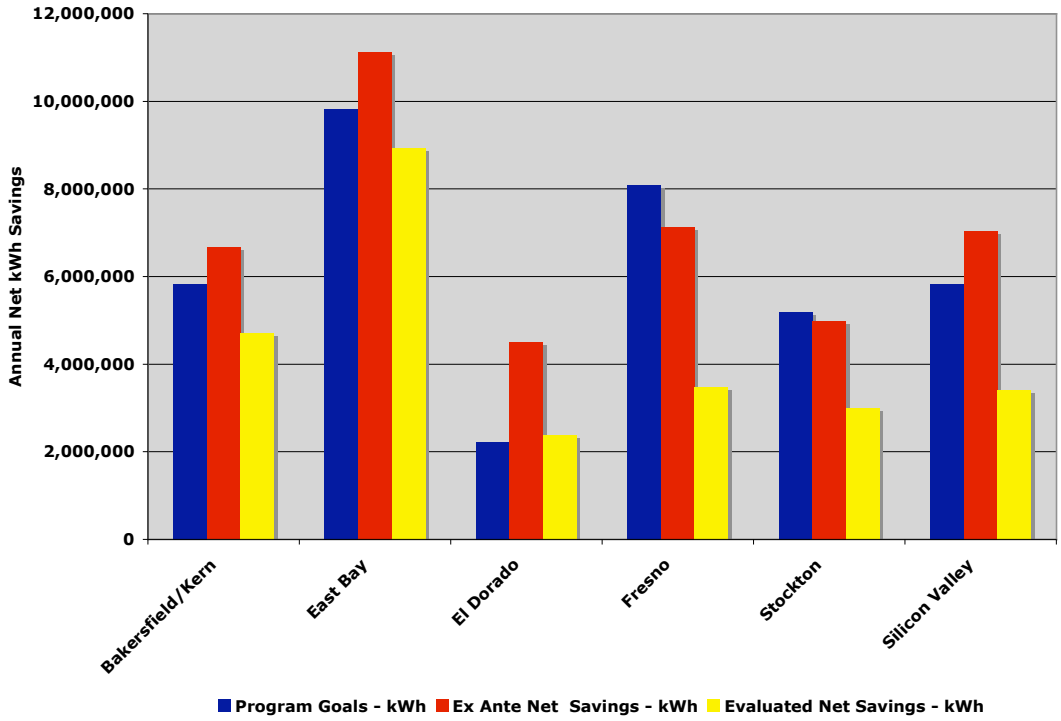


Figure 4: Comparison of Net Evaluation kW Savings with Program Goals

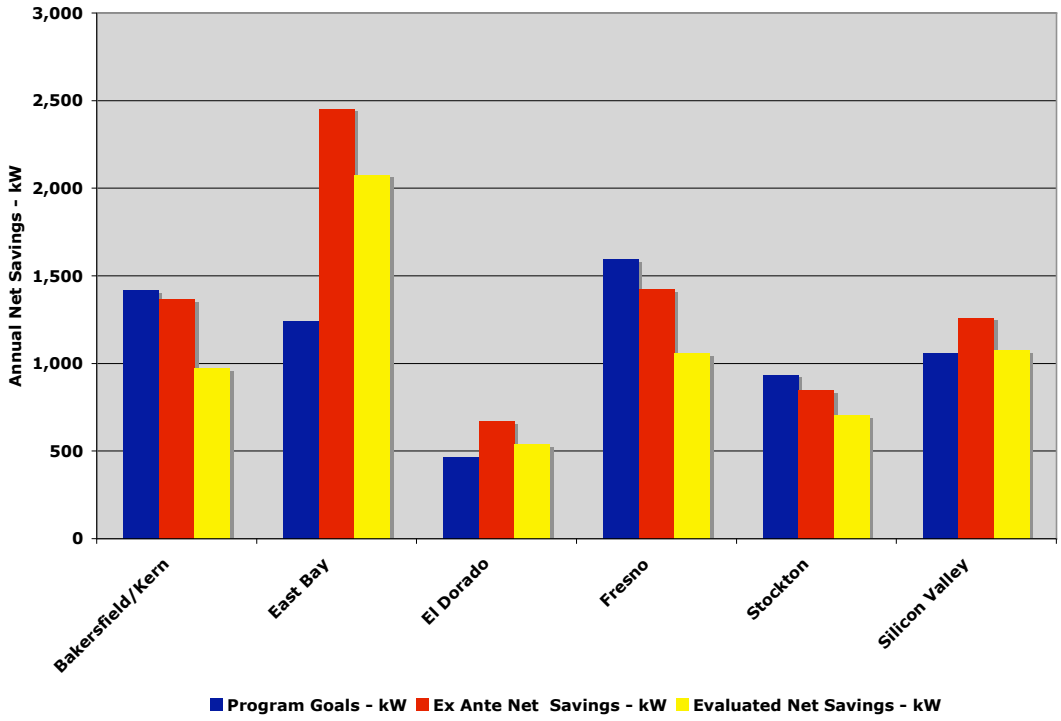


Figure 5 shows the levelized cost of the kWh's saved by each partnership. The levelized cost was calculated using the Total Resource Cost (TRC) method with the total program cost data taken from the December 2005 monthly reports for each partnership.[5] The levelized cost per kWh for each partnership varied only moderately, with a low of just over $0.06 (Silicon Valley) and a high of just over $0.08 (Fresno).

Figure 5: Levelized Cost Per kWh - TRC

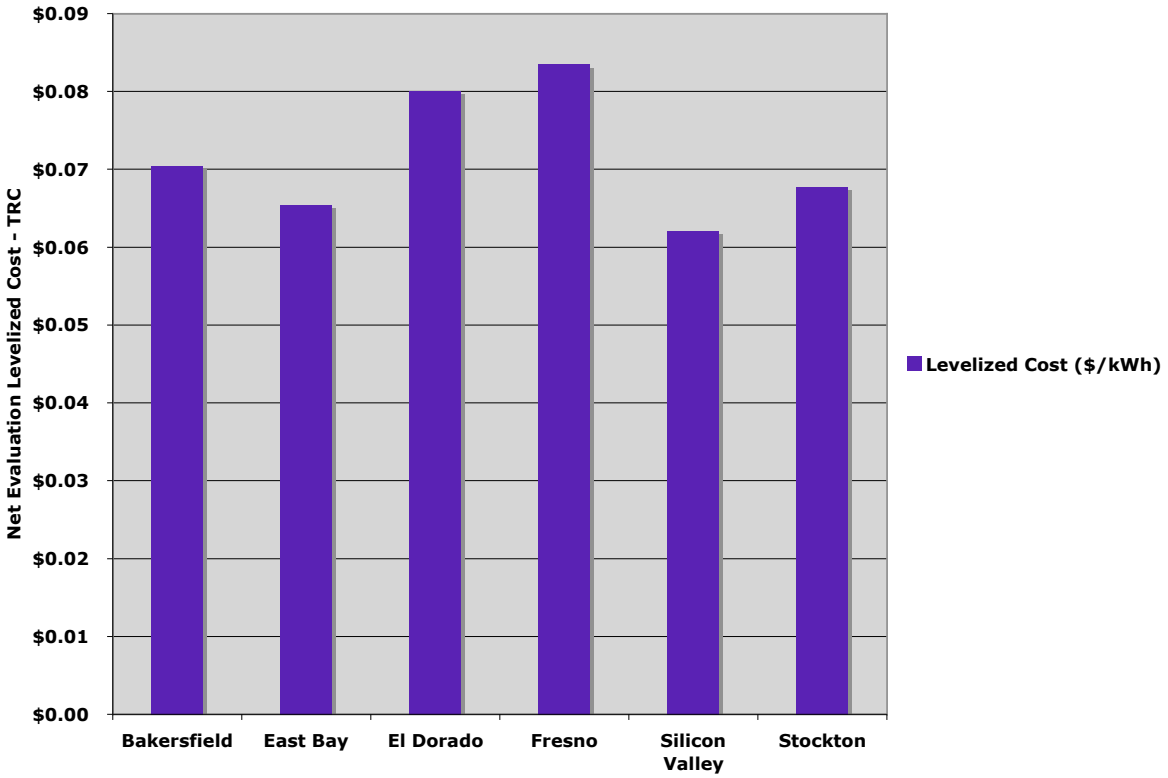


Table 12 shows the levelized costs along with the benefit-cost ratio using the TRC measure of benefits and calculated using the evaluation net *ex post* impacts. The resulting benefit cost ratio is shown in the far right column of the table and a ratio greater than 1.0 indicates that the program is cost-effective. Although the *ex post* impacts are substantially less than the *ex ante* impacts and program goals, the Partnerships are still estimated to be cost-effective based on the TRC test. As with the $/kWh values, there is only a modest difference in the benefit-cost ratios across Partnerships.

[5] The cost data for Stockton came from the November 2005 monthly report as a December 2005 report was unavailable.

Table 12: Performance Measures by Partnership Based on Net *Ex Post* Impacts

Partnership	Net Resource Benefits - TRC	Resource Costs From Monthly Reports	Levelized Cost ($/kWh)	Levelized Cost ($/therm)	Benefits / Costs
Bakersfield	$2,765,333.28	$2,377,751	$0.07	$5.40	1.16
East Bay	$4,886,304.18	$4,085,605	$0.07	$8.91	1.20
El Dorado	$1,899,654.45	$1,296,156	$0.08	$0.88	1.47
Fresno	$2,410,813.60	$1,930,014	$0.08	$1.40	1.25
Silicon Valley	$2,288,431.57	$1,783,553	$0.06	$6.06	1.28
Stockton	$1,766,976.71	$1,332,047	$0.07	$2.14	1.33
Total	**$16,017,513.78**	**$12,805,126**	**$0.07**	**$2.74**	**1.25**

Given these results, it is clear that the Partnership portfolio has been able to deliver cost-effective savings. The cost effectiveness measures are also very similar across the individual Partnerships, which suggests that there is no clear advantage for any particular delivery method, measure mix, or targeted sector. The program designs, however, are quite similar in that they generally promote the same measures and use similar delivery strategies, so the lack of variation in the cost-effectiveness measures is not surprising.

The remainder of this report presents the detailed evaluation results for each of the Partnership programs.

4. BAKERSFIELD / KERN ENERGY WATCH PARTNERSHIP

PROGRAM BACKGROUND

The following program description is based on our review of the Program Implementation Plan, staff interviews, and reviews of the monthly reports.

The Bakersfield Kern Energy Watch Local Government Partnership was a partnership between Pacific Gas and Electric Company (PG&E), Southern California Edison (SCE), Southern California Gas Company (SoCalGas), the City of Bakersfield (City), the County of Kern (County), and Staples/Hutchinson and Associates, Inc. This Partnership offered:

- Direct installation of energy-efficient technologies in residences and small businesses in selected areas;
- Free energy surveys for small businesses in selected areas;
- Free energy surveys and energy efficient lights to homebuyers;
- Free local educational and training seminars for residential contractors, commercial building owners and operators, design/build firms, and engineers and architects working on commercial properties;
- Energy-efficiency retrofits for municipal buildings;
- Support for energy-efficient codes and standards development and enforcement; and
- Information on other energy efficiency programs offered by PG&E, SCE and SoCalGas, including rebates for selected energy-efficient equipment.

Below is a summary of each of the individual programs that comprised the Bakersfield Kern Partnership.

Single and Multi-Family Direct Install

The Single and Multi-Family Direct Install program elements:

- Provided free in-home energy audits and recommendations on ways to save energy with the goal of educating participants of the benefits of choosing energy efficient equipment;
- Replaced inefficient lighting with new, hardwired energy efficient fixtures. Incandescent lamps were replaced with screw-in CFLs. The program also installed programmable thermostats.

The Direct Install component was coordinated with the Low Income Energy Efficiency (LIEE) program to locate potential Direct Install participants in Bakersfield and the Kern County target cities of McFarland, Mojave, South Taft, Weedpatch and Oildale. When LIEE outreach workers canvassed neighborhoods to identify qualified LIEE participants, they determined which

programs single and multi-family residences qualified for and could participate in (i.e. LIEE or the Energy Watch Direct Install program.) The Direct Install program also installed measures in the common areas that are not covered by the LIEE program and installed measures in the units of non-LIEE customers. Marketing tools used for this and the other program elements included: attendance at industry trade shows and the County Fair, a program website, television and radio promotions in English and Spanish, news releases and press conferences, mail brochures, and in-store promotional displays (e.g., hardware stores).

Realtor Program

This program element used local realtors to offer homebuyers free energy audits, programmable thermostats, and CFLs, along with information on other statewide energy efficiency programs. Participating realtors are also given marketing materials to provide to their clients, with a mail-back card addressed to Staples/Hutchinson or its agent for home buyers to request the free services. Staples/Hutchinson marketed the realtor program and was responsible for implementing this program element.

Small Business Services

Staples/Huchinson, with assistance from CHEERS, contacted, screened, trained and pre-approved contractors who then provided services to participating customers under this program. The program targeted small businesses located in the three development areas in Bakersfield, along with selected redevelopment areas in the county. Contractors performed audits and direct installation of selected energy efficient measures, and identified no-cost and low-cost ways that customers can save energy.

Energy Efficiency Services and Incentives for Municipal Buildings

PG&E and SCE supported City and County investments in energy efficiency retrofits at municipal facilities by providing free energy audits. The program also offered financial incentives to help offset capital investments in energy efficient retrofits. PG&E used its SPC infrastructure to provide technical review of applications, pre and post-post installation confirmations, verification of energy savings and incentive payment processing.

Support for Codes and Standards Compliance

This program element tried to make energy savings an integral part of building and purchasing decisions. Projects included:

- Title 24 and other training related to improving compliance with existing building standards;
- Analysis and recommendations on local government energy efficiency ordinances.

Training Seminars

Staff from PG&E provided education and training classes in a variety of locations to business owners and operators, residential contractors, commercial design/building firms, and engineers and architects working on commercial properties. These classes demonstrated the most effective

methods of illumination, and showed how to reduce energy costs through a better understanding of lighting, refrigeration and HVAC operation.

RESIDENTIAL PROGRAM SURVEY RESULTS – BAKERSFIELD / KERN (BK)

For the residential component of the Bakersfield Kern Partnership, 444 phone interviews were completed and these included both PG&E and SCE residential customers. Respondents within this segment participated in the Single Family and Multi-family Direct Install program components as well as in the Realtor Program. Survey results for selected questions are presented below.

Demographic Summary

As shown in Table 13, of the 444 residential survey respondents, 62 percent own and 37 percent rent their homes.

Table 13: Home Ownership – BK Residential

Response (n = 444)	% Of Respondents
Own	62%
Rent	37%
Refused/Don't know	>1%

DE1: Do you own or rent your home?

Table 14 shows that roughly half of the respondents (51 percent) earn $20,000 or less per year, and 80 percent earn $50,000 or less per year. The high rate of low-income families is not surprising given that many of the participants have been referred through the LIEE programs. Nevertheless, this result does indicate that the program has been successful in reaching the low-income residential population.

Table 14: Household Income – BK Residential

Response (n = 444)	% Of Respondents
$20,000 or less	51%
$20,000 to $50,000	29%
$50,000 to $75,000	5%
$75,000 to $100,000	2%
More than $100,000	>1%
Refused/Don't Know	13%

DE8: Which of the following best represents your annual household income in 2004, before taxes?

As shown in Table 15, 75 percent of the respondents primarily speak English in their homes, while 25 percent primarily speak a language other than English. This indicates that the program is successfully reaching a portion of the non-English speaking population, which has been designated as a hard-to-reach demographic.

Table 15: Language Spoken in Home – BK Residential

Response (n = 444)	% Of Respondents
English	75%
Spanish	23%
Other*	2%

DE10: What is the primary language spoken in your home?

* Includes Mandarin, Cantonese, Tagalog, Korean, Vietnamese, Russian, Japanese, Other, and Refused/Don't Know

Partnership Awareness and Participant Motivations

Residential respondents were given a list of sources and were asked to indicate how they first became aware of the program. Table 16 shows that most participants became aware of the program from the installer of the equipment (30 percent) or from word of mouth (27 percent).

Table 16: Source of Program Awareness – BK Residential

Response (n = 444)	% Of Respondents
From technician that installed/provided the equipment	30%
Other business, word of mouth, friend, or relative	27%
Mail	7%
Local news, radio, or newspaper	6%
Found independently	2%
School, church, or community organization	2%
Non-profit agency or environmental group	<1%
Internet	<1%
Other	17%
Don't know	9%

A25: How did you first become aware of the program?

Table 17 shows the most commonly cited reasons for participating in the program. The majority of the respondents (70 percent) participated in order to reduce their electric bills. The second most common reason for participating (19 percent) was to receive free equipment. (Respondents were allowed to provide multiple responses, which is why percentages sum to over 100 percent).

Table 17: Reasons for Participation – BK Residential

Response (n = 444)	% Of Respondents
Saving money on electric bills	70%
To receive free equipment	19%
Replacing old or broken equipment	8%
Energy crisis	8%
Recommended by neighboring business or friend	4%
Helping protect the environment	3%
Acquiring the latest technology	3%
To learn more about ways to reduce energy costs	3%
Other	5%

A28: Why did your household participate in the program?

Sponsorship of the program by PG&E and their local government was also important in the respondents' decision to participate in the program.[6] As shown in Table 18, 77 percent of respondents thought it was very important that their local government sponsored the program and 81 percent thought that it was very important that PG&E sponsored the program. Our analysis allowed us to analyze the survey results with demographic information. Although this is not shown in Table 18, it is worth noting that non-English speaking respondents were more likely to indicate that both PG&E and local government sponsorship were very important in their decision to participate.

Table 18: Importance of Government Sponsorship – BK Residential

Response (n = 444)	Local Government	PG&E
Very important	77%	81%
Somewhat important	16%	13%
Not at all important	6%	5%
Refused/Don't know	1%	1%

SPON1: In deciding to participate in the [PARTNERSHIP_NAME] program, how important was it to you that [LOCAL_GOVERNMENT] sponsored the program? Would you say it was…

SPON3: How important was it to you that PG&E sponsored the program? Would you say it was. . .

Table 19 presents responses to a series of attitudinal questions about energy efficient products. Respondents were asked to provide a rating of 1 ("Disagree Completely) to 10 ("Agree Completely") in response to a series of statements regarding the value of energy efficient products, and the ease or difficulty of procuring them. In general, respondents were polarized on

[6] A portion of the respondents surveyed were SCE customers and consequently were asked about the importance of SCE sponsorship on their decision to participate.

most statements with a large share either completely agreeing or disagreeing. For these questions, respondents were judged to "strongly agree" if they provided a rating of 8 or higher and "strongly disagree" if they provided a rating of 3 or lower.

Respondents tended to agree with the statement "actual bill savings will be less than estimated," with forty two percent indicating that they strongly agree with the statement (rating 8 or higher) with 30 percent providing a rating of 10. In contrast, 26 percent of respondents strongly disagreed with the statement on bill savings. In regard to equipment costs, respondents were only slightly more likely to agree with the statement "we were not able to finance the upgrades and pay for them over time" with 39 percent of respondents indicated that they strongly agreed with this statement (rating 8 or higher) while 32 percent of respondents strongly disagreed with this statement by giving it a rating of 3 or lower.

Respondents tended to disagree with the statement "getting a utility rebate is too much hassle." This statement received an average rating of 3.9, with 52 percent of the respondents indicating that they strongly disagree with this statement (45 percent gave a rating of 1) and 22 percent indicating that they strongly agreed.

The last three statements are somewhat different than the other attitudinal questions because they are partially related to household demographics (i.e., home ownership) in addition to perceptions about efficient energy. For these statements, only the responses of home renters are shown. In regard to the statement "the space is rented and I need the owner's consent to make improvements," 68 percent of the renters surveyed indicated that they strongly agreed (rating 8 or higher) while 22 percent indicated that they strongly disagreed (rating 3 or lower). In comparison, renters tended to disagree with the statement "I'm not at this location for long," with 56 percent of renters indicating that they strongly disagreed. Twenty four percent of renters said they strongly agreed with this statement. Renters also tended to disagree with the statement "It's not worth investing because it's not my building," with 58 percent indicating that they strongly disagreed and 29 percent indicating that they strongly agreed with this statement.

Table 19: Respondent Beliefs About Energy Efficient Products – BK Residential

Rating Scale: 1 = Disagree Completely, 10 = Agree Completely	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK %	N=	Average
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	20	4	2	2	11	3	6	7	5	30	11	444	6.1
I don't have the information I need to make an informed decision about energy efficient investments.	30	5	5	2	10	3	5	8	3	25	6	444	5.3
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	34	4	2	2	10	2	4	6	2	17	18	444	4.6
We are not able to finance the upgrades and pay for them over time.	25	4	3	2	12	2	3	7	3	29	9	444	5.8
Getting a utility rebate is too much hassle.	45	5	2	1	7	0	4	4	2	16	13	444	3.9
The space is rented and I need the owner's consent to make improvements.*	17	3	2	1	3	0	2	8	5	55	3	166	7.5
I'm not at this location for long.*	51	3	2	1	8	1	2	5	4	15	8	166	3.8
It's not worth investing because it's not my building.*	51	5	2	0	7	1	3	6	1	22	4	166	4.1

PE35A-H: How well do each of the following statements describe your beliefs about energy efficiency investments?

* Results are shown for renters only.

To assess the effectiveness of referrals, respondents were asked if they were aware of other energy efficiency programs. Then as a follow-up question, they were asked if anyone from the Partnership had referred them to other programs. As shown in Table 63, 84 percent were unaware of other energy efficiency programs. Less than 1 percent said that they had been referred to other programs by the Partnership staff they talked with. As with the other Partnerships, the low level of awareness of other programs indicates that the methods being used to promote other programs are generally ineffective.

Table 20: LGP Referrals to Other Energy Efficiency Programs – BK Residential

Response (n = 444)	% Of Respondents
Not aware of other programs	84%
Yes, referred by Partnership	>1%
No, not referred by Partnership	13%
Don't Know	>1%

A30: Besides the [PARTNERSHIP_NAME] program, are you aware of other programs that are designed to promote energy efficiency?

A32: Did anyone from the [PARTNERSHIP_NAME] program recommend that you participate in any other energy conservation program?

Measure Installation Verification

A series of questions were asked during the phone surveys to verify the installation of measures. Respondents were asked to confirm the type and number of measures installed based on the information contained in PG&E's tracking system about the installation.

Table 21 shows the share of respondents that had some of installed measures removed, either for equipment failure or other reasons. Respondents indicated that 18 percent had removed CFL bulbs, 7 percent had removed CFL Fixtures, and 13 percent had removed the thermostat installed through the program.

Note that Table 21 shows the share of *respondents* with failed or removed measures. Subsequent tables show the results of additional verification questions that address the share of *measures* that are no longer in place. The results that are a function of the share of measures are the ones that are used later in this section to adjust the net impacts for this Partnership.

Table 21: Failure and Removal Rate of Installed Measures – BK Residential

Measure	Failed/Removed	No Problems	R/DK
	%	%	%
CFL Bulb (n = 422)	18%	81%	1%
CFL Fixture (n = 306)	7%	92%	1%
Thermostat (n = 62)	13%	87%	0%

RET20: Have any of those [M_DESC] installed failed or been removed?

Additional questions were asked to differentiate CFL bulbs that were removed because of failure and those that were removed for non-failure reasons (e.g., a remodeling required the removal, the equipment was upgraded, light too bright or dim). The vast majority of CFL bulbs that were removed were removed because they failed during or after installation.

Table 22 shows for those respondents that did replace CFL bulbs for non-failure reasons, the type of replacement lighting that they installed (as in the preceding table, the share of *respondents* is shown). The table shows that the respondents replaced CFL bulbs with both

incandescent and CFL lighting. The primary reasons for removing and replacing the lighting was because they broke it, or because they did not like the physical appearance.

Table 22: Lighting Used to Replace Removed CFL Bulbs – BK Residential

Replacement Lighting (n = 9)	% Of Respondents
Incandescent bulbs	44%
CFLs	56%
Other	0%
Refused/Don't know	0%

RET84: Were they replaced with….?

As shown in Table 23, about 14 percent of the 444 participants interviewed had their energy efficiency equipment dropped off for them to install, as opposed to having it installed upon delivery.

Table 23: Equipment Installation Method – BK Residential

Response (n = 444)	% Of Respondents
Yes, program installed equipment	84%
No, equipment dropped off	14%
Refused/ Don't know	2%

VER10: Did someone from the program install all of the products, or were they given to you for you to install later?

Table 24 below shows the results for both the phone survey verification and the on-site visit verification. The first column in each section shows how many sites had each of the measures listed. In addition to CFLs, CFL Fixtures, Thermostats, and T5/T8s, there are some measures that fall into the category 'Other' that have not been shown in the table. Since many sites had more than one measure, the total for sites is the number of unique sites surveyed or visited.

The second column displays the quantity of measures as it was reported in the PG&E tracking database. The third column shows the quantity of each measure that could be verified either by the verifier on-site, or by the respondent over the phone. The percentage shown in the fourth column shows the percent verified of the sites visited or interviewed. If a percentage is greater than 100 percent, additional measures were found installed that were not included in the PG&E tracking data for this program. It is unclear if this is due to errors in coding of these measures in the system or if these measures were installed through other programs.

A total of 121 on-sites were conducted for the residential component of the Bakersfield Kern Partnership. The primary measure, CFLs, had a 126 percent verification rate at 119 sites. 94 percent of the CFL Fixtures were verified and 77 percent of thermostats were verified. Overall, the verification rate was over 100 percent for all measures combined in the Bakersfield Kern Partnership.

Table 24: Phone and On-site Visit Verification – BK Residential

	On-site Visit				Phone Survey			
	Equipment Reported		Equipment Verified		Equipment Reported		Equipment Verified	
Measures	Sites	Quantity	Quantity	Percent	Sites	Quantity	Quantity	Percent
CFLs	119	387	489	126%	440	2,052	1,855	90%
CFL Fixtures	74	209	196	94%	321	890	1,090	122%
Thermostats	30	30	23	77%	70	71	75	106%
T5/T8s	1	1	1	100%	2	3	2	67%
Total	121	627	709	113%	444	3,016	3,022	100%

The initial plan for the evaluation was to analyze the on-site and phone verification results and create an adjustment factor that utilized data from both sources. The phone survey results, however, differed substantially from the on-site results across the various Partnerships. In some cases the phone verification rate was greater than the on-site rate while in other cases the phone verification rate was lower. These differences occurred across both Partnerships and measures. Due to this wide variability and the lack of a consistent trend, we did not use the phone survey data for the verification rates and relied only on the on-site data as we believe that the on-site data are more accurate for verification purposes.

Verification adjustment factors for use in the net impact analysis were developed using the following method. For those measures that were found at more than 10 sites, the measure-specific verification rate is used. For those measures that had a sample of 10 sites or less, the overall average on-site verification rate was applied for that Partnership. While 10 sites is still a relatively small sample, we believe that the benefits of using a measure-specific adjustment factor outweigh the uncertainty of the small sample. Finally, if the verification rate was greater than 100 percent, it was capped at 100 percent as it was not possible to determine if the additional measures were installed through the Partnership program, some other efficiency program, or purchased by the participant outside any efficiency program. Therefore, to be conservative the verification rate is capped at 100 percent. The resulting verification rate is used to adjust impacts at the measure level as part of the net realized impacts calculations discussed at the end of this section.

Participant Satisfaction with Program

Shown in Table 25 are the satisfaction scores for various program elements. Respondents were asked to rate a series of statements, with a rating of 1 indicating "extremely dissatisfied" and a rating of 10 indicating "extremely satisfied." In general, all elements scored well, averaging 8.5 to 9.1 out of 10. The overall satisfaction level was high (8.9 out of 10) with only 1 percent of the respondents giving less than 5. Satisfaction with the installation process scored the highest (9.1) and had low levels of dissatisfaction (2 percent gave a rating less than a 5). Interaction with program staff was similarly high (8.9) with few discontent respondents (3 percent gave a rating less than 5). Respondents were also generally satisfied with the information provided about the

program (8.9). Despite participant concerns about realizing expected billing savings (see Table 19 – Respondent Beliefs), customer satisfaction with bill savings was also high (8.5) with only 4 percent giving a score of less than 5.

Table 25: Satisfaction with Program Elements – BK Residential

Rating Scale: 1 = Extremely Dissatisfied, 10 = Extremely Satisfied	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK %	N=	Average
Overall satisfaction with the program experience	1	0	0	0	4	3	5	13	11	59	1	444	8.9
Information provided about the program	2	2	1	1	3	4	2	13	11	57	2	444	8.7
Interaction with program staff	2	0	0	1	3	2	3	13	11	60	4	444	8.9
Bill savings	3	0	1	0	4	3	5	13	7	43	20	444	8.5
Installation process	2	0	0	0	3	3	2	11	11	64	4	444	9.1

SAT2-30. On a scale of 1 to 10 where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Table 26 shows that 75 percent of respondents indicated that they are more likely to make future energy efficiency improvements after participating in the Partnership. In a separate question (table not shown), 79 percent of the respondents who received CFLs indicated that they plan on replacing them with new CFLs when they burn out. Of those respondents who plan on using CFLs in the future, 93 percent indicated that the Partnership was at least somewhat influential in this decision, with 66 percent indicating that the Partnership was very influential.

Table 26: Future Energy Efficient Installations – BK Residential

Response (n = 444)	% Of Respondents
More likely	75%
Less likely	5%
Same	16%
Refused/Don't Know	3%

PE11: Are you more or less likely to install energy-efficiency products as a result of your experience with this program?

Self-Reported Free Ridership

Table 27 shows the responses to two separate questions regarding what would have been done in absence of the program. The first question asks respondents directly what they would have done in absence of the program. The second question was asked separately to determine which respondents were considering installing energy efficiency equipment prior to learning about the Partnership. In developing a free ridership estimate, we assigned full and partial free ridership rates as follows:

- Those that claim they would have purchased the same equipment at the same time, and were already considering installing the equipment are full free riders.

- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment before they learned about the program are partial free riders, at 50 percent.

- Those that claim they would have purchased the same equipment at a later time, and were already considering installing the equipment are partial free riders, at 50 percent.

- Those that claim they would have purchased the same equipment at a later time, but were not considering installing the equipment before they learned about the program are partial free riders, at 25 percent.

- Those that claim they would have not have purchased equipment, or would have purchased standard equipment are net participants (no free ridership).

For the residential measures in the Bakersfield/Kern Partnership, the self-reported free ridership rate is 29.5 percent, which is higher than the free ridership rates currently used for these measures for this Partnership. The current net-to-gross ratio is 0.89, which implies a free ridership rate of 11 percent (or more depending on the assumption regarding spillover).

Table 27: Self-Reported Free Ridership – BK Residential

What type of equipment would you have purchased had the rebate not existed?	Before you learned about the program, were you already considering purchasing the measure?	Measures	Quantity Weighted Percent	Contribution to Free Ridership
None	Yes	69	2.6%	0.0%
	No	568	21.4%	0.0%
Standard Equipment	Yes	235	8.9%	0.0%
	No	629	23.7%	0.0%
Same Energy Efficient Equipment, Later	Yes	347	13.1%	6.5%
	No	178	6.7%	1.7%
Same Energy Efficient Equipment, Now or Earlier	Yes	503	19.0%	19.0%
	No	125	4.7%	2.4%
Total		**2,654**	**100.0%**	**29.5%**

For the self-reported free ridership estimates, the results are sensitive to the weights applied to the partial free ridership responses. We have used a weight of 50 percent for partial free riders and 25 percent for partial free riders that were not considering purchasing equipment prior to speaking with a technician about the Partnership. Any such weighting scheme is somewhat arbitrary, and these weights were chosen as they are generally consistent with other evaluation studies (such as Express Efficiency) and seemed to be reasonable assumptions for this program.

To test how sensitive the results are to the partial free ridership weighting assumptions, we also calculated free ridership rates assuming a lower weight for partial free riders. This weighting scheme applies a 50 percent reduction to the weights already assigned (25 percent for partial free riders and 12.5 percent for those that were not considering purchasing equipment prior to being involved with the Partnership). With these lower rates, the estimated free ridership for CFLs falls from 35 percent to 24 percent. Similarly, for CFL Fixtures the rate falls from 18 percent to 13 percent.

A similar sensitivity test was done by increasing the weights 50 percent for partial free riders. To calculate a higher bound for the estimate, a weight of 75 percent was used for partial free riders and 37.5 percent for partial free riders that were not considering purchasing equipment prior to learning about the Partnership. With this weighting increase, the estimated free ridership rate for CFLs increases from 35 percent to 41 percent. For CFL Fixtures, the free ridership rate increases from 18 percent to 23 percent.

The sensitivity analysis just discussed is summarized in Table 28. Although the weight ranges used for the sensitivity analysis are also arbitrarily chosen, they do provide useful information on how much the free ridership rates might vary under alternative assumptions. Note that these results do not account for any additional error that may be introduced by response bias previously discussed for these types of questions.

Table 28: Free Ridership Sensitivity Analysis - BK Residential

Free Ridership Weighting Scheme	All Measures	CFL	CFL Fixture	Thermostats
Current Weighting (Partial FR weight=50%, 25%)	29.5%	34.5%	17.8%	31.0%
Low Weighting (Partial FR weight=25%, 12.5%)	24.2%	28.9%	13.1%	26.7%
High Weighting (Partial FR weight= 75%, 37.5%)	34.8%	40.1%	22.5%	35.3%

NET IMPACT RESULTS – BK RESIDENTIAL

The preceding information regarding self-reported free ridership, and installation verification is used to adjust the *ex ante* gross impacts to determine the *ex post* net realized impacts for the residential portion of the Bakersfield Kern Partnership. The specific adjustments and the effect on net realized impacts for both energy and demand are discussed below.

2004-05 Cumulative kWh Impacts – BK Residential

The adjustment factors used to determine *ex post* net realized impacts from the *ex ante* gross impacts are shown in Table 29. Free ridership adjustments are derived from the survey data discussed in the previous section. We were able to develop separate free ridership adjustments for the CFLs and CFL Fixtures. For the others we use the average self-reported free ridership rate derived from the survey data from the Bakersfield Kern residential participants.

Finally, we adjust savings based on the verification rate developed from the on-site audit data. We used the observed verification rates obtained during the on-sites for CFLs, CFL Fixtures, and Thermostats. For all other measures we use the average overall verification rate of 1.00.

Table 29: *Ex Post* Net Realization Rates for kWh Impacts – BK Residential

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.76	1.00	0.76
CFL Fixtures	0.82	0.94	0.77
Thermostats	0.79	0.77	0.61
Other Measures	0.80	1.00	0.80

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 30. The largest reductions from the original *ex ante* gross impacts are in the CFL and CFL Fixtures categories and also comprise the majority of the savings.

Note that Table 30 shows the change in the *ex ante* and *ex post* net savings, while Table 29 shows the change from *ex ante* gross impacts to *ex post* net impacts. For example, with CFLs the *ex post* net impacts are 76 percent of *ex ante* gross impacts (as shown in Table 29), or a reduction of 24 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is slightly less at a 15 percent reduction (as shown in Table 30).

Table 30: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – BK Residential

Measure	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	2,335,127.5	2,078,263.4	1,517,832.8	-27.0%
CFL Fixtures	2,862,292.3	2,547,440.2	2,206,254.9	-13.4%
Thermostats	400,816.8	356,726.9	212,953.9	-40.3%
Total	5,598,236.5	4,982,430.5	3,937,041.7	-21.0%

2004-05 Cumulative kW Impacts – BK Residential

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 31. As with the kWh impacts, the kW impacts are adjusted to account for verification, free ridership, and the *ex post* net realization rate is the product of the adjustment factors shown in the table.

Table 31: *Ex Post* Net Realization Rates for kW Impacts – BK Residential

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.76	1.00	0.76
CFL Fixtures	0.82	0.94	0.77
Thermostats	0.79	0.77	0.61
All Other Measures	0.80	1.00	0.80

The same issues relating to uncertainty discussed with the kWh impacts also apply to the *ex post* kW impacts. For example, there is uncertainty regarding the survey responses used for the self-reported free ridership due to the weighting scheme and the potential for response bias with these types of questions.

Table 32 shows the final *ex post* kW impacts for the residential component using the adjustment factors from Table 31. Table 33 provides a similar comparison for the net therm impacts for the residential component.

Table 32: Change in *Ex Ante* and *Ex Post* Net kW Impacts – BK Residential

Measure	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	289.6	257.7	188.2	-27.0%
CFL Fixtures	243.9	217.1	188.0	-13.4%
Thermostats	621.3	552.9	330.1	-40.3%
Total	1,154.7	1,027.7	706.3	-31.3%

Table 33: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – BK Residential

Measure	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
Thermostats	112,258.9	99,910.4	59,643.1	-40.3%

The impact table required by the CPUC, showing kWh, kW, and therm savings over time (commercial and residential combined) and taking into account the expected useful life for each measure, is included in *Appendix A*.

COMMERCIAL PROGRAM SURVEY RESULTS – BAKERSFIELD / KERN (BK)

A total of 65 customers were surveyed from the commercial portion of the Bakersfield Kern Partnership. These respondents were participants in the Small Business Services direct install component. Selected survey results are presented below.

Firmographic Summary

As shown in Table 34, of the 65 commercial respondents, 52 percent own their business facility and 37 percent lease their facility.

Table 34: Business Ownership – BK Commercial

Response (n = 65)	% Of Respondents
Own	52%
Lease/Rent	37%
Refused/Don't know	11%

RENT5: Does your business own, lease or rent the facility?

Table 35 shows that 65 percent of the businesses surveyed have 10 or fewer employees, with 42 percent of the businesses having 5 or fewer employees. The high percentage of businesses with 10 or fewer employees is evidence that the program is successfully reaching the small business segment.

Table 35: Number of Employees – BK Commercial

Response (n = 65)	% Of Respondents
1 to 5	42%
6 to 10	23%
11 to 20	14%
21 to 50	6%
Refused/Don't Know	15%

FIRM5: Which of the following categories describes the number of employees your firm has at this address?

Partnership Awareness and Participant Motivations

Commercial respondents were given a list of sources and were asked to indicate how they first became aware of the program. Table 36 shows that aside from "other sources," most participants became aware of the program from the installer of the equipment (34 percent) or from word of mouth (15 percent).

Table 36: Source of Program Awareness – BK Commercial

Response (n = 65)	% Of Respondents
From technician that installed/provide the equipment	34%
Other business, word of mouth, friend, or relative	15%
Local news, radio, or newspaper	3%
Mail	3%
Internet	2%
Found independently	2%
Other	31%
Don't know	11%

A25: How did you first become aware of the program?

Table 37 shows the most commonly cited reasons for participating in the program. The majority of the respondents (60 percent) participated in order to reduce the size of their electric bills. Receiving free equipment and helping to protect the environment were tied as the second most common reason for participating (23 percent).

Table 37: Reasons for Participation – BK Commercial

Response (n = 65)	% Of Respondents
Saving money on electric bills	60%
To receive free equipment	23%
Helping protect the environment	23%
Energy crisis	18%
Replacing old or broken equipment	8%
Acquiring the latest technology	3%

A28: Why did your company participate in the program?

Sponsorship of the program by PG&E and their local government was important in the commercial respondents' decision to participate in the program, though not as important as for residential respondents (see Table 18). As shown in Table 38, 84 percent of respondents thought it was at least somewhat important that their local government sponsored the program and 90 percent thought that it was at least somewhat important that PG&E sponsored the program.

Table 38: Importance Of Government Sponsorship - BK Commercial

Response (n = 65)	Local Government	PG&E
Very important	52%	68%
Somewhat important	32%	22%
Not at all important	5%	2%
Refused/Don't know	11%	9%

SPON1: In deciding to participate in the [PARTNERSHIP_NAME] program, how important was it to you that [LOCAL_GOVERNMENT] sponsored the program? Would you say it was…

SPON3: How important was it to you that PG&E sponsored the program? Would you say it was. . .

Table 39 presents responses to a series of attitudinal questions about energy efficient products. Respondents were asked to provide a rating of 1 ("Disagree Completely) to 10 ("Agree Completely") in response to a series of statements regarding the value of energy efficient products, and the ease or difficulty of procuring them. In general, respondents were polarized on most statements with a large share either completely agreeing or disagreeing. Respondents that provided ratings of 8 or higher were considered to "strongly agree" while those with ratings of 3 or less were considered to "strongly disagree."

Respondents were more likely to agree with the statement "actual bill savings will be less than estimated." Thirty percent indicated that they strongly agreed with the statement while 22 percent of respondents strongly disagreed with the statement on bill savings. Respondents were also more likely to agree with the statement "we were not able to finance the upgrades and pay for them over time," with 37 percent indicating that they strongly agreed with this statement while 27 percent of respondents strongly disagreed with this statement.

Respondents tended to disagree with the statement "getting a utility rebate is too much hassle." This statement received an average rating of 4.6, with 36 percent of the respondents indicating that they strongly disagree with this statement (rating 3 or lower) and 22 percent indicating that they strongly agreed (rating 8 or higher).

The last three statements are somewhat different than the other attitudinal questions because they are partially related to business firmographics (i.e., ownership) in addition to perceptions about efficient energy. For these statements, only the responses of business renters are shown. In regard to the statement "the space is rented and I need the owner's consent to make improvements," 46 percent of the renters surveyed indicated that that they strongly agree (rating 8 or higher) while 33 percent indicated that they strongly disagree (rating 3 or lower). In comparison, renters tended to disagree with the statement "I'm not at this location for long," with 71 percent of renters indicating that they strongly disagree. Thirteen percent of renters indicated that they strongly agree with this statement. Renters also tended to disagree with the statement "It's not worth investing because it's not my building," with 62 percent indicating that they strongly disagree and 17 percent indicating that they strongly agree.

Table 39: Respondent Beliefs About Energy Efficient Products - BK Commercial

Rating Scale: 1 = Disagree Completely, 10 = Agree Completely	1%	2%	3%	4%	5%	6%	7%	8%	9%	10 %	R/DK %	N=	Average
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	14	5	2	2	22	2	12	12	0	18	13	65	5.9
I don't have the information I need to make an informed decision about energy efficient investments.	23	3	9	8	15	5	3	14	3	11	7	65	4.9
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	25	6	5	2	15	3	14	6	3	11	11	65	4.9
Lack of financing is a barrier to our organization making energy efficiency investments that we want to make.	20	2	5	2	15	8	6	11	9	17	7	65	5.8
Getting a utility rebate is too much hassle.	29	2	5	2	20	5	6	11	5	6	11	65	4.6
The space is rented and I need the owner's consent to make improvements*	29	0	4	0	17	0	4	4	0	42	0	24	6.0
I'm not at this location for long.*	67	0	4	0	13	0	0	0	0	13	4	24	2.8
It's not worth investing because it's not my building.*	46	8	8	0	13	0	8	0	0	17	0	24	3.8

PE35A-H: How well do each of the following statements describe your beliefs about energy efficiency investments?

* Results are shown for renters only.

Table 40 shows the degree to which commercial survey respondents recalled referrals to other energy conservation programs by the Bakersfield Partnership staff. Most respondents (89 percent) were unaware of any other energy efficiency program. Of the remainder that were aware, only a fraction (2 percent all respondents) recalled being referred to other programs by Partnership staff. As with the residential customers for this Partnership, respondents are generally not retaining any information received about other programs and participants remain generally unaware of other program opportunities.

Table 40: LGP Referrals To Other Energy Efficiency Programs - BK Commercial

Response (n = 65)	% Of Respondents
Not aware of other programs	89%
Yes, referred by Partnership	2%
No, not referred by Partnership	6%
Don't Know	3%

A30: Besides the program, are you aware of other programs that are designed to promote energy efficiency?

A32: Did anyone from the [PARTNERSHIP_NAME] program recommend that you participate in any other energy conservation program?

Installation Verification

Table 41 shows the type of product delivery for the commercial portion of the Bakersfield Partnership. Of the commercial customers surveyed, the majority (83 percent) said that the equipment was installed by the program rather than dropped off, while 15 percent said the equipment was only dropped off.

Table 41: Equipment Installation Method - BK Commercial

Response (n = 65)	% Of Respondents
Yes, program installed equipment	83%
No, equipment dropped off	15%
Don't Know	2%

VER10: Did someone from the program install all of the products, or were they given to you for you to install later?

Table 42 shows the share of respondents that had some of installed measures removed, either for equipment failure or other reasons. Respondents indicated that 12 percent had removed CFL bulbs, 9 percent had removed T5/T8 lights, and 7 percent had removed the light sensors installed through the program.

Table 42: Failure Rate of Installed Measures – BK Commercial

Measure	Failed/Removed	No Problems	R/DK
	%	%	%
CFL Bulb (n = 42)	12%	86%	2%
T5/T8 (n = 43)	9%	91%	0%
Sensor (n = 15)	7%	87%	7%

RET20: Have any of those [M_DESC] installed failed or been removed?

Additional questions were asked to differentiate CFL bulbs that were removed because of failure and those that were removed for non-failure reasons (e.g., a remodeling required the removal, the

equipment was upgraded, light too bright or dim). The vast majority of CFL bulbs that were removed were removed because they failed during or after installation.

Table 43 shows for those respondents that did replace CFL bulbs for non-failure reasons, the type of replacement lighting that they installed (as in the preceding table, the share of *respondents* is shown). The table shows that the respondents replaced CFL bulbs with both incandescent and CFL lighting. The primary reasons for removing and replacing the lighting was because they broke it, it burned out, or because the light was too dim or too bright.

Table 43: Lighting Used to Replace Removed CFL Bulbs – BK Commercial

Replacement Lighting (n = 11)	% Of Respondents
Incandescent bulbs	45%
CFLs	45%
Other	9%
Refused/Don't know	0%

RET84: Were they replaced with….?

Table 44 below shows the results for the phone survey verification as well as the on-site visit verification. The first column in each section shows how many sites had each of the measures listed. In addition to CFLs, CFL Fixtures, Thermostats, and T5/T8s, there are some measures that fall into the category 'Other' that have not been shown in the table.

The second column displays the quantity of measures as it was reported in the PG&E tracking database. The third column shows the quantity of each measure that could be verified either by the verifier on-site, or by the respondent over the phone. The percentage shown in the fourth column shows the percent verified of the sites visited or interviewed. If a percentage is greater than 100 percent, additional measures were found installed that were not included in the PG&E tracking data for this program. It is unclear if this is due to errors in coding of these measures in the system or if these measures were installed through other programs.

The 11 on-site visits for the commercial part of the Bakersfield Partnership verified installation of almost all of the T5/T8 measures (99 percent). CFLs had a much lower verification rate, at 41 percent. Overall, 93 percent of all measures were verified as installed for the commercial component of the Bakersfield Kern Partnership.

Table 44: Phone and On-site Visit Verification – BK Commercial

	On-site Visit				Phone Survey			
	Equipment Reported		Equipment Verified		Equipment Reported		Equipment Verified	
Measures	Sites	Quantity	Quantity	Percent	Sites	Quantity	Quantity	Percent
CFLs	8	66	27	41%	132	1,393	1,316	94%
CFL Fixtures	0	0	0		0	0	0	
Thermostats	0	0	0		38	76	56	74%
T5/T8s	11	548	543	99%	48	3,406	2,932	86%
Total	11	614	570	93%	153	4,875	4,304	88%

The same verification rate methodology discussed for the residential measures is also used for the commercial measures. For those measures that were found at 10 or more sites, the measure-specific verification rate is used in the net impact calculations. For those found at less than 10 sites, the overall average on-site verification rate is used for that Partnership. All verification rates are capped at 100 percent to avoid crediting the Partnership with measures installed outside the program.

Participant Satisfaction with Program

Table 45 shows the commercial customer satisfaction with various program elements of the Bakersfield Partnership. Respondents were asked to rate a series of statements, with a rating of 1 indicating "extremely dissatisfied" and a rating of 10 indicating "extremely satisfied." For the most part, participants were satisfied with their overall program experience, giving an average satisfaction rating of 8.5 with 77 percent providing a satisfaction rating of 8 or higher. Slightly lower satisfaction levels were recorded for the information provided by the program and interaction with program staff. Satisfaction with the information provided about the program received an average rating of 8.1, with 71 percent of respondents providing a rating of 8 or higher and 28 percent giving a rating of 3 or lower.

The installation process received an average score of 8.3. The satisfaction of the installation process may reflect the percentage (15 percent) of participants that said their equipment was dropped off rather than installed by the program (see Table 41).

Satisfaction with the audit process received the highest average ranking, along with overall program satisfaction. Sixty eight percent of the respondents gave a rating of 8 or higher for the audit process, with 40 percent of respondents giving a ranking of 10.

Satisfaction with bill savings was lower than other categories, with an average rating of 7.7. With respect to bill savings, 48 percent of respondents gave bill savings a satisfaction rating of 8 or higher, with 31 percent giving a rating of 10. The relatively lower average rating for bill savings is partly a result of the 8 percent of respondents who gave a rating of 1 (extremely dissatisfied) along with the high percentage (31 percent) who gave a response of "refused" or "don't know."

The lower rating may also be partly in response to respondents' concern that bill savings will be less than what was estimated (see Table 39).

Table 45: Respondent Satisfaction With Program - BK Commercial

Rating: 1 = Extremely Dissatisfied, 10 = Extremely Satisfied	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK/NA %	n =	Average
Overall satisfaction with the program experience	3	0	2	0	3	2	5	22	17	38	10	65	8.5
Information provided about the program	26	0	2	0	8	0	5	23	11	37	9	65	8.1
Interaction with program staff	2	0	2	3	3	5	11	18	11	34	12	65	8.2
Bill savings	8	0	0	2	9	2	2	8	9	31	31	65	7.7
Audit Process	2	0	0	0	3	5	9	22	3	40	17	65	8.5
Installation process	3	0	2	2	5	8	2	17	12	40	11	65	8.3

SAT2-30. On a scale of 1 to 10 where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Table 46 shows that 66 percent of all respondents are more likely to make future energy efficiency improvements after participating in the program. In a separate question, 77 percent of the respondents who had CFLs installed indicated that they plan on replacing the CFLs with new CFLs when they burn out. Of those that will use CFLs as replacements, 92 percent of respondents that installed CFLs indicated that the program was at least somewhat influential in their decision do so and 66 percent indicated that the program was very influential in their decision.

Table 46: Future Energy Efficient Installations – BK Commercial

Response (n = 65)	% Of Respondents
More likely	66%
Less likely	6%
Same	23%
Refused/Don't Know	5%

PE11: Are you more or less likely to install energy-efficiency products as a result of your experience with this program?

Table 47 shows the responses to two separate questions regarding what would have been done in absence of the program. The first question asks respondents directly what they would have done in absence of the program. The second question was asked separately to determine which respondents were considering installing energy efficiency equipment prior to learning about the Partnership. In developing a free ridership estimate, we assigned full and partial free ridership rates as follows:

- Those that claim they would have purchased the same equipment at the same time, and were already considering installing the equipment are full free riders.
- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment before they learned about the program are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, and were already considering installing the equipment are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, but were not considering installing the equipment before they learned about the program are partial free riders, at 25 percent.
- Those that claim they would have not have purchased equipment, or would have purchased standard equipment are net participants (no free ridership).

For the commercial measures in the Bakersfield/Kern Partnership, the self-reported free ridership rate is 30.4 percent. This is on the upper end of the free ridership rates currently used for the Bakersfield / Kern Partnership. The net-to-gross ratios currently used range from 0.70 to 0.96, which implies free ridership rates of 4 to 30 percent for these measures. For the CFL and T8/T5 measures, the *ex ante* net-to-gross ratios was 0.96, which implies an even lower free ridership rate of 4 percent (assuming no spillover).

Table 47: Self-Reported Free Ridership – BK Commercial

What type of equipment would you have purchased had the rebate not existed?	Before you learned about the program, were you already considering purchasing the measure?	Measures	Quantity Weighted Percent	Contribution to Free Ridership
None	Yes	657	17.0%	0.0%
	No	826	21.4%	0.0%
Standard Equipment	Yes	188	4.9%	0.0%
	No	1129	29.3%	0.0%
Same Energy Efficient Equipment, Later	Yes	374	9.7%	4.8%
	No	224	5.8%	1.5%
Same Energy Efficient Equipment, Now or Earlier	Yes	366	9.5%	9.5%
	No	92	2.4%	1.2%
Total		**3856**	**100.0%**	**17.0%**

For the self-reported free ridership estimates, the results are sensitive to the weights applied to the partial free ridership responses. We have used a weight of 50 percent for partial free riders

and 25 percent for partial free riders that were not considering purchasing equipment prior to speaking with a technician about the Partnership. Any such weighting scheme is somewhat arbitrary and these weights were chosen as they are generally consistent with other evaluation studies (such as Express Efficiency) and seem to be reasonable assumptions for this program.

To test how sensitive the results are to the partial free ridership weighting assumptions, we also calculated free ridership rates using a lower weight for partial free riders. This weighting scheme applies a 50 percent reduction to the weights already assigned (25 percent for partial free riders and 12.5 percent for those that were not considering purchasing equipment prior to interacting with the Partnership staff). With these lower rates, the estimated free ridership for CFLs falls from 41 percent to 35 percent. Similarly, for T8/T5s the rate falls from 5 percent to 2 percent.

A similar sensitivity test was done by increasing the weights 50 percent for partial free riders. To calculate a higher bound for the estimate, a weight of 75 percent was used for partial free riders and 37.5 percent for partial free riders that were not considering purchasing equipment prior to learning about the program. With this weighting increase, the estimated free ridership rate for CFLs increases from 41 percent to 48 percent. For T8/T5s, the free ridership rate increases from 5 percent to 7 percent.

The sensitivity analysis just discussed is summarized in Table 48. Although the weight ranges used for the sensitivity analysis are also arbitrarily chosen, they do provide useful information on how much the free ridership rates might vary under alternative assumptions. Note that these results do not account for any additional error that may be introduced by response bias previously discussed for these types of questions.

Table 48: Free Ridership Sensitivity Analysis – BK Commercial

Free Ridership Weighting Scheme	All Measures	CFL	T5/T8	Other Measures
Current Weighting (Partial FR weight=50%, 25%)	17.0%	41.1%	4.8%	23.1%
Low Weighting (Partial FR weight=25%, 12.5%)	13.2%	34.5%	2.4%	20.2%
High Weighting (Partial FR weight= 75%, 37.5%)	20.7%	47.6%	7.2%	26.0%

NET IMPACTS RESULTS – BK COMMERCIAL

The preceding information regarding self-reported free ridership, operating hours, and installation verification is used to adjust the *ex ante* gross impacts to determine the *ex post* net realized impacts for the commercial components of the Bakersfield Kern Partnership. The specific adjustments and the effect on net realized impacts for both energy and demand are discussed below.

2004-05 Cumulative kWh Impacts – BK Commercial

As discussed in the *General Evaluation Findings* section of this report, the operating hour assumption for the commercial lighting measures is likely higher than the operating hours actually realized for small businesses targeted by this Partnership. (See discussion of this issue in

the *Chapter 3* of this report.) To correct for this, we apply an adjustment to the savings for CFLs, T8/T5s, and CFL Fixtures.

The adjustment factors used to determine *ex post* net realized impacts from the *ex ante* gross impacts are shown in Table 49. Free ridership adjustments are derived from the survey data discussed in the previous section. We were able to develop separate free ridership rates for the CFL and T8/T5 measures and used these to create the adjustment factors shown below. For the others we use the average self-reported free ridership rate derived from the survey data from the Bakersfield Kern commercial participants.

Finally, we adjust savings based on the verification rate developed from the on-site audit data. Given the small on-site sample, we use the overall verification rate of 0.93 to adjust for persistence for all measures.

Table 49: *Ex Post* Net Realization Rates for kWh Impacts – BK Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Operating Hours Adjustment	Verification	*Ex Post* Net Realization Rate
CFLs	0.69	0.44	0.93	0.28
T5/T8	0.95	0.58	0.93	0.51
Other Measures	0.77	1.00	0.93	0.72

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 50. The largest reductions from the original *ex ante* gross impacts are in the T8/T5 and CFL categories and also comprise the majority of the savings. These savings from the original planning estimates are largely due to the reduced operating hour adjustment based on the on-site verification results.

Note that Table 49 shows the change in the *ex ante* and *ex post* net savings, while Table 50 shows the change from *ex ante* gross impacts to *ex post* net impacts. For example, with the T8/T5 measure group the *ex post* net impacts are 51 percent of *ex ante* gross impacts (as shown in Table 49), or a reduction of 49 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is slightly less at a 47 percent reduction (as shown in Table 50).

Table 50: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – BK Commercial

Measure	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	655,671.1	626,345.1	158,297.4	-74.7%
T5/T8	916,799.7	879,018.6	469,795.6	-46.6%
High Efficiency Chiller	33,636.0	23,545.2	24,086.7	2.3%
Exit Signs	13,703.0	13,154.9	9,812.7	-25.4%
HVAC/Refrigeration	66,400.0	46,480.0	47,549.0	2.3%
Motors/Other	3,560.0	2,492.0	2,549.3	2.3%
Sensors	94,791.1	90,306.8	67,879.9	-24.8%
Total	1,784,560.9	1,681,342.6	779,970.7	-53.6%

2004-05 Cumulative kW Impacts – BK Commercial

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 51. As with the kWh impacts, the kW impacts are adjusted to account for verification, free ridership, and the *ex post* net realization rate is the product of the adjustment factors shown in the table.

Table 51: *Ex Post* Net Realization Rates for kW Impacts – BK Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.69	0.93	0.64
T5/T8	0.95	0.93	0.88
All Other Measures	0.77	0.93	0.72

The same issues relating to uncertainty discussed with the kWh impacts also apply to the *ex post* kW impacts. For example, there is uncertainty regarding the survey responses used for the self-reported free ridership due to the weighting scheme and the potential for response bias with these types of questions.

Table 52 shows the final *ex post* kW impacts for the commercial component using the adjustment factors from Table 51.

Table 52: Change in *Ex Ante* and *Ex Post* Net kW Impacts – BK Commercial

Measure	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	118.6	113.2	65.1	-42.5%
T5/T8	173.1	166.0	153.0	-7.8%
High Efficiency Chiller	15.4	10.8	11.0	2.3%
Exit Signs	1.7	1.6	1.2	-25.4%
HVAC/Refrigeration	6.6	4.6	4.8	2.3%
Motors/Other	0.4	0.2	0.3	2.3%
Sensors	41.5	39.7	29.8	-25.1%
Total	357.3	336.2	265.0	-21.2%

The impact table required by the CPUC, showing kWh, kW, and therm savings over time (commercial and residential combined) and taking into account the expected useful life for each measure, is included in *Appendix A*.

The tables below show the overall kWh, kW, and therm savings by program component (both residential and commercial sectors).

Table 53: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – BK Programs

Program	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
BK – Multi-Family (Direct Install)	1,958,941.5	1,743,457.9	1,437,132.1	-17.6%
BK – Single-Family (Direct Install)	1,087,704.3	968,056.9	769,508.2	-20.5%
BK – Small Biz (Direct Install)	1,610,952.5	1,546,514.4	679,892.5	-56.0%
BK – Small Biz Residential Realtor (Direct Install)	1,189,623.7	1,058,765.1	753,684.0	-28.8%
BK – SPC	33,636.0	23,545.2	24,086.7	2.3%
SCE – Multi Family	721,147.0	641,820.8	530,359.9	-17.4%
SCE – Realtor	57,614.9	51,277.2	36,979.5	-27.9%
SCE – Single Family	583,205.2	519,052.6	409,378.1	-21.1%
SCE – Small Biz	70,012.4	62,311.1	25,893.2	-58.4%
SCE – SPC Plus	69,960.0	48,972.0	50,098.4	2.3%
Total	7,382,797.4	6,663,773.1	4,717,012.5	-29.2%

Table 54: Change in *Ex Ante* and *Ex Post* Net kW Impacts – BK Programs

Program	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
BK – Multi-Family (Direct Install)	289.0	257.2	176.1	-31.5%
BK – Single-Family (Direct Install)	254.9	226.9	159.2	-29.8%
BK – Small Biz (Direct Install)	320.0	307.2	239.3	-22.1%
BK – Small Biz Residential Realtor (Direct Install)	382.6	340.6	218.4	-35.9%
BK – SPC	15.4	10.8	11.0	2.3%
SCE – Multi Family	98.6	87.8	70.6	-19.5%
SCE – Realtor	12.8	11.4	7.6	-33.4%
SCE – Single Family	116.8	104.0	74.4	-28.4%
SCE – Small Biz	14.9	13.3	9.7	-27.2%
SCE – SPC Plus	7.0	4.9	5.0	2.3%
Total	1512.1	1,363.9	971.3	-28.8%

Table 55: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – BK Programs

Program	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
BK – Multi-Family (Direct Install)	30,037.5	26,733.4	15,958.9	-40.3%
BK – Single-Family (Direct Install)	22,950.0	20,425.5	12,193.3	-40.3%
BK – Small Biz Residential Realtor (Direct Install)	44,955.0	40,010.0	23,884.6	-40.3%
SCE – Multi Family	2,215.6	1,971.9	1,177.2	-40.3%
SCE – Realtor	1,363.5	1,213.5	724.4	-40.3%
SCE – Single Family	10,737.3	9,556.2	5,704.7	-40.3%
Total	112,258.9	99,910.4	59,643.1	-40.3%

CONCLUSIONS AND RECOMMENDATIONS

From the analysis presented above, the following conclusions are drawn for the Bakersfield / Kern Partnership:

- **Reporting requirements must include contact information.** As discussed below, Partnerships are not required to submit participant contact information. This has made phone surveys and on-site verification difficult as we can only contact a portion of the customers for each Partnership.

- **Participant satisfaction is high.** For all the Partnerships, customers we surveyed were generally pleased with their program experience and gave high satisfaction ratings to the program overall and to individual program elements discussed during the phone survey.

- **The Partnership has been generally successful in reaching its target customer groups.** As shown in the survey results, the Partnership has been successful in reaching a significant amount of renters, low-income households, small businesses and non-English customer groups. These findings help support the program theory that the current program design is an effective way to recruit these traditionally hard-to-reach customer groups.

- **Both PG&E and local government sponsorship are considered important.** Participants overwhelmingly agreed that PG&E and local government sponsorship was important. For residential participants, 81 percent rated PG&E sponsorship as "Very Important," while 71 percent gave the same rating to local government sponsorship. Similarly, 68 percent of the commercial participants gave a "Very Important" rating to PG&E sponsorship and 52 percent gave the same rating to local government involvement.

- **Renters may have more influence over building energy decisions than originally assumed.** While many of the participants rent their homes or businesses, they still have a high level of control over the equipment decisions at the facility. A majority of renters (58 percent residential, 62 percent commercial) strongly disagreed with the statement that it was not worth investing in energy efficiency because they did not own the building. Most of these renters also indicated that they did not need to get the building owner's consent prior to making improvements to the building.

- **Participants still have very low awareness of other energy efficiency programs.** The vast majority of participants are unaware of other energy efficiency programs. Of those that are aware, very few recalled having programs recommended to them by the Partnership staff they interacted with. This indicates that Partnership efforts to funnel participants to other programs have had little or no effect.

- **Self-reported free ridership rates are slightly higher than rates currently used**. The survey questions used to estimate free ridership typically resulted in values that were higher than what is currently assumed for these programs.

Based on these conclusions, we offer the following recommendations for the Bakersfield / Kern Partnership:

- **Continue with the current program implementation method.** The process evaluation showed that the key elements of the program theory were supported through the existing program delivery method. Customer satisfaction is also high for all program elements. As long as this can be maintained and net savings are achieved, we see no reason why the current program design should be modified except as indicated in the other evaluation recommendations presented in this report.

- **Commercial operating hour assumptions need to be revised for T8/T5s and CFLs.** The current assumptions for annual operating hours are much higher than those found in comparable studies using on-site audit data and logger data for similar small business customers. Correcting for the operating hours substantially lowers the net *ex post* kWh and kW impacts for these measures in the commercial sector.

- **A separate study should be conducted to revise the operating hour assumptions used in the DEER database for small businesses.** A review of the DEER database revealed that in general the operating hours assigned for small businesses for T8/T5s and CFLs are higher than what has been observed for small business customers in this and other evaluation studies. However, the DEER database also delineates operating hours by business type and there is significant variation in operating hours across business categories. There was not a large enough sample of on-sites in this evaluation to produce separate operating hour estimates for each of the business types currently supported in the DEER database. We recommend a separate study be conducted to address this issue, as it appears that the current operating hour assumptions are generally too high for small business customers for T8/T5s and CFLs.

- **Require that full contact information be required for program tracking.** Currently, PG&E does not require that full contact information be reported for its Partnership, which hampered the evaluation effort and led to a more costly survey effort than originally planned. We strongly recommend that complete contact information (contact name, address, phone number) become a reporting requirement for each Partnership.

- **Improve program referral methods.** If referral to other efficiency programs is to remain a criterion for this Partnership, then the referral methods need to be improved. Possibilities for increasing program awareness include leaving program informational materials with customers, providing a checklist of other measures that could be replaced match with a list of related programs, and follow-up phone calls from other programs to recruit these customers for additional measure installations.

5. CITY OF FRESNO

PROGRAM BACKGROUND

The following program description is based on our review of the Program Implementation Plan, staff interviews, and reviews of the monthly reports.

The Fresno Energy Savings Alliance (Alliance) was a partnership between Pacific Gas and Electric Company (PG&E), the City of Fresno (City) and Richard Heath and Associates (RHA). The purpose of the partnership was to reduce electric and gas energy usage for residents and business owners located in the heart of Fresno, including its downtown and midtown district neighborhoods. These areas all have sizable hard-to-reach (HTR), non-English speaking, elderly and disabled citizen populations. Additionally, the Partnership coordinated with PG&E's statewide and local energy efficiency programs to offer the following programs:

- Single-Family and Multi-Family Home Direct Install Program
- Small and Medium-Sized Business Direct Install Program
- Energy-Efficient Services and Incentives for Municipal Buildings
- Codes and Standards Support
- Educational and Informational Services

Single-Family and Multi-Family Home Direct Install Program

This program supplied free energy audits and direct install services to single and multi-family homes. RHA contacted, screened and pre-approved contractors who then provided direct install services to participating customers. Marketing and outreach activities were conducted by RHA and existing Low Income Energy Efficiency (LIEE) contractors. Marketing tools included informational pamphlets and flyers, energy efficiency workshops and demonstration projects, radio news announcements, and updates to PG&E's and the City's websites. Community based organizations (CBOs) were also informed and enlisted to promote the program. The program also successfully targeted existing California Alternate Rates for Energy (CARE) participants, seniors, the disabled, and boarding and care facilities.

Small and Medium Size Business Direct Install Program

The business direct install program provided free energy efficiency services including on-site energy audits, consultations to help business owners assess services that implement energy efficiency changes, and technical assistance in selecting appropriate energy efficient equipment. The program utilized PG&E's Food Service Technology Center (FSTC) to offer restaurants, cafeterias, institutional kitchens, food wholesalers, and suppliers specialized energy audits, advice and technical assistance, and funded direct installs of prescriptive energy efficiency measures for eligible customers.

Fresno's Economic Development Department assisted in the marketing of the program by working with local media outlets (e.g., arranging television coverage of an installation at a local CBO) and other public departments and agencies. Other marketing efforts included bill inserts, special promotional events and direct promotions by City building and health inspectors.

Energy Efficiency Services and Incentives for Municipal Buildings

This program planned to offer free energy audits, technical assistance and financial incentives to support City investments in energy efficiency retrofits at municipal facilities. PG&E and City facility managers were to benchmark energy usage at City facilities, establish retrofit priorities, estimate energy savings, and identify equipment choices. Financial incentives would help to offset capital investments in energy efficient retrofits. Program staff and the City initiated discussions to identify potential projects, however no municipal building retrofits were completed.

Codes and Standards Support

PG&E provided Title 24 training and educational seminars related to energy codes and standards for existing and future building designs. These courses were targeted to building owners, designers, engineers, architects and building officials in Fresno.

Education and Information Services

PG&E provided energy clinics and classes designed specifically for residents and businesses located in Fresno's Enterprise Zone. Through this free training, residential and business customers received suggestions for reducing their energy bills and operating more energy-efficiently. PG&E's Energy Training Center (ETC), Pacific Energy Center (PEC), and Food Service Technology Center offered courses and seminars in the City for contractors, builders, building designers and facility managers in heating, ventilation and air conditioning, Title 24 compliance, windows, insulation, food service and whole house issues.

SURVEY RESULTS – FRESNO (FRE) RESIDENTIAL

For the Fresno Partnership, 200 surveys were completed for residential customers participating in the Single-Family and Multi-Family Direct Install program components. Selected survey results are shown below.

Demographic Summary

As shown in Table 56, of the 200 residential survey respondents, 63 percent rent and 37 percent own their homes.

Table 56: Home Ownership – FRE Residential

Response (n = 200)	% Of Respondents
Rent	63%
Own	37%
Refused/Don't know	0%

DE1: Do you own or rent your home?

Table 57 shows that roughly half of the respondents (58 percent) earn $20,000 or less per year, and about 80 percent earn $50,000 or less per year. The high rate of low-income families is not surprising given that many of the participants have been referred through the LIEE programs. Nevertheless, this result does indicate that the program has been successful in reaching the low-income residential population.

Table 57: Household Income – FRE Residential

Response (n = 200)	% Of Respondents
$20,000 or less	58%
$20,000 to $50,000	23%
$50,000 to $75,000	4%
$75,000 to $100,000	0%
More than $100,000	1%
Refused/Don't Know	15%

DE8: Which of the following best represents your annual household income in 2004, before taxes?

Sixty-seven percent of the respondents primarily speak English in their homes, while 27 percent primarily speak Spanish (Table 58). As with the previous demographics tables, this indicates that the program is successfully reaching the non-English speaking component of the hard-to-reach residential population.

Table 58: Language Spoken in Home – FRE Residential

Response (n = 200)	% Of Respondents
English	67%
Spanish	27%
Other*	6%

DE10: What is the primary language spoken in your home?

* Includes Mandarin, Cantonese, Tagalog, Korean, Vietnamese, Russian, Japanese, Other, and Refused/Don't Know

Partnership Awareness and Participant Motivations

Respondents were asked how they first became aware of the Partnership program, and the results are shown in Table 59. The largest group of respondents (43 percent) learned of the program from the technician that provided the equipment (renters and/or Spanish speakers were especially likely to learn of the program this way). The next most likely source of Partnership information was through personal contacts.

Table 59: Source of Program Awareness – FRE Residential

Response (n = 200)	% Of Respondents
From technician that installed/provided the equipment	43%
Other	24%
Other business, word of mouth, friend, or relative	18%
Mail	6%
Don't know	4%
Local news, radio, or newspaper	3%
Local government	1%
School, church, or community organization	0%
Internet	0%
Found independently	0%

A25: How did you first become aware of the program?

The most commonly cited reasons for participating in the program were to save money on electric bills (70 percent) and to receive free equipment (28 percent). Table 60 shows in more detail a summary of the responses (respondents were allowed to provide multiple answers).

Table 60: Reasons for Participation – FRE Residential

Response (n = 200)	% Of Respondents
Saving money on electric bills	70%
To receive free equipment	28%
Other	20%
Replacing old or broken equipment	10%
Energy crisis	9%
Helping protect the environment	4%
Recommended by neighboring business or friend	4%
Acquiring the latest technology	4%

A28: Why did your household participate in the program?

Sponsorship of the program by PG&E and their local government was also important in the respondents' decision to participate in the program. As shown in Table 61, about 95 percent of respondents thought it was at least somewhat important that either of these organizations sponsored the program. Eighty percent considered it very important that the local government was sponsoring the program and 87 percent said the same for PG&E.

Table 61: Importance of Government Sponsorship – FRE Residential

Response (n = 200)	Local Government	PG&E
Very important	80%	87%
Somewhat important	14%	10%
Not at all important	3%	3%
Refused/Don't know	4%	<1%

SPON1: In deciding to participate in the [PARTNERSHIP_NAME] program, how important was it to you that [LOCAL_GOVERNMENT] sponsored the program? Would you say it was…

SPON3: How important was it to you that PG&E sponsored the program? Would you say it was. . .

Table 62 presents responses to a series of attitudinal questions about energy efficient products. More specifically, respondents were asked if they agreed or disagreed with a series of statements regarding the value of energy efficient products, and the ease or difficulty of procuring them (10 = "Agree Completely," 1 = "Disagree Completely"). In general, respondents were polarized on most statements with a large share either completely agreeing or disagreeing. For these questions, a rating of 8 or higher was considered as "strongly agree" while a rating of 3 or less was considered as "strongly disagree."

Respondents generally agreed with the statement "actual bill savings will be less than estimated," with 43 percent strongly agreeing (rating 8 or higher) and 31 percent providing a rating of 10. In contrast, 23 percent of respondents strongly disagreed with the statement on bill savings and gave it a rating of 3 or lower. This question received the highest level of agreement, considering all respondents, with an average score of 6.4.

In regard to equipment costs, 40 percent of respondents strongly agreed with the statement "we were not able to finance the upgrades and pay for them over time." Only 23 percent of respondents strongly disagreed with this statement by giving it a rating of 3 or lower (average score = 6.3). This suggests that initial installation costs may remain a significant hurdle for many residential customers, and supports the program theory assumption that a direct install program is needed to get these customers to adopt energy efficient measures.

Respondents were generally split on whether they had enough information to make informed energy decisions, with 35 percent strongly agreeing with this statement (rating 8 or higher) and 37 percent strongly disagreeing by rating 3 or less. Respondents were generally neutral regarding whether it is easy or difficult to select a qualified contractor. Respondents were least likely to agree with the statement "getting a utility rebate is too much hassle" (41 percent gave a rating of 3 or less). In comparison, 20 percent strongly agreed with the statement (rating 8 or higher).

The last three statements are somewhat different than the other attitudinal questions because they are partially related to household demographics (i.e., home ownership) in addition to perceptions about efficient energy. For these statements, only the responses of home renters are shown. Many renters strongly agreed that the property owner must approve any energy-related improvements, with 52 percent giving a rating of 10. In comparison, renters tended to disagree

with the statement "I'm not at this location for long," with 50 percent of renters giving a rating of 3 or lower. Twenty-two percent of renters strongly agreed with this statement by giving a rating of 8 or higher. Similarly, renters also tended to disagree with the statement "It's not worth investing because it's not my building," with 51 percent strongly disagreeing and 30 percent strongly agreeing.

Table 62: Respondent Beliefs About Energy Efficient Products – FRE Residential

Rating Scale: 1 = Disagree Completely, 10 = Agree Completely	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK %	N=	Average
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	17	5	1	0	10	3	3	9	3	31	20	200	6.4
I don't have the information I need to make an informed decision about energy efficient investments.	28	5	4	1	11	3	5	5	2	28	6	200	5.4
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	25	4	3	1	8	1	1	6	2	17	29	200	5.0
We are not able to finance the upgrades and pay for them over time.	15	6	2	2	12	3	4	7	2	31	16	200	6.3
Getting a utility rebate is too much hassle.	32	6	3	2	6	0	3	5	4	12	26	200	4.2
The space is rented and I need the owner's consent to make improvements.*	18	3	2	0	6	1	3	2	1	52	12	125	7.2
I'm not at this location for long.*	42	6	2	2	6	1	4	3	2	17	17	125	4.0
It's not worth investing because it's not my building.*	37	9	5	2	6	2	4	2	2	26	7	125	4.7

PE35A-H: How well do each of the following statements describe your beliefs about energy efficiency investments?

* Results are shown for renters only.

To assess the effectiveness of referrals, respondents were asked if they were aware of other energy efficiency programs and if they had been referred to these programs by someone from the Partnership. As shown in Table 63, 82 percent were unaware of other energy efficiency programs. Only 1 percent said that they had been referred to other programs by the Partnership staff they talked with. As with the other Partnerships, the low level of awareness of other programs indicates that the methods being used to promote other programs are generally ineffective.

Table 63: LGP Referrals to Other Energy Efficiency Programs – FRE Residential

Response (n = 200)	% Of Respondents
Not aware of other programs	82%
Yes, referred by Partnership	<1%
No, not referred by Partnership	13%
Don't Know	4%

A30: Besides the [PARTNERSHIP_NAME] program, are you aware of other programs that are designed to promote energy efficiency?

A32: Did anyone from the [PARTNERSHIP_NAME] program recommend that you participate in any other energy conservation program?

Measure Installation Verification

As shown in Table 64, about 6 percent of the 200 participants interviewed had their energy efficiency equipment dropped off for them to install, as opposed to having it installed upon delivery.

Table 64: Equipment Installation Method – FRE Residential

Response (n = 200)	% Of Respondents
Yes, program installed equipment	91%
No, equipment dropped off	6%
Refused/ Don't know	3%

VER10: Did someone from the program install all of the products, or were they given to you for you to install later?

Table 65 shows the share of respondents that had some of installed measures removed, either for equipment failure or other reasons. Respondents indicated that 8-9 percent had removed lighting measures while 12 percent had removed the thermostat installed through the program.

Note that Table 65 shows the share of *respondents* with failed or removed measures. Subsequent tables show the results of additional verification questions that address the share of *measures* that are no longer in place. The results that are a function of the share of measures are the ones that are used later in this section to adjust the net impacts for this Partnership.

Table 65: Failure Rate of Installed Measures – FRE Residential

Measure	Failed/Removed	No Problems	R/DK
	%	%	%
CFL Bulb (n = 187)	9%	89%	2%
T5/T8 (n = 13)	8%	69%	23%
CFL Fixture (n = 158)	8%	92%	1%
Thermostat (n = 93)	12%	87%	1%
Other (n = 33)	18%	79%	3%

RET20: Have any of those [M_DESC] installed failed or been removed?

Additional questions were asked to differentiate CFL bulbs that were removed because of failure and those that were removed for non-failure reasons (e.g., a remodeling required the removal, the equipment was upgraded, light too bright or dim). The vast majority of CFL bulbs that were removed were removed because they failed during or after installation. Only three respondents replaced CFL bulbs for non-failure reasons, and all used incandescent bulbs for the replacement lighting. The reasons for replacement were that the bulbs burned out, were too big for the lampshades, or that the light was too dim.

Table 66 below shows the results for both the phone survey verification and the on-site visit verification. The first column in each section shows how many sites had each of the measures listed. In addition to CFLs, CFL Fixtures, Thermostats, and T5/T8s, there are other miscellaneous measures that were omitted from the table.

The second column displays the quantity of measures as it was reported in the PG&E tracking database. The third column shows the quantity of each measure that could be verified either by the verifier on-site, or by the respondent over the phone. The percentage shown in the fourth column shows the percent verified of the sites visited or interviewed. If a percentage is greater than 100 percent, additional measures were found installed that were not included in the PG&E tracking data for this program. It is unclear if this is due to errors in coding of these measures in the system or if these measures were installed through other programs.

The 23 on-site visits for the residential part of the Fresno Partnership resulted in an overall verification rate of over 100 percent. Only CFL Fixtures had a low verification rate at 78 percent. The 22 sites that had CFLs installed had a 118 percent verification rate. All 11 thermostats reported were found on-site. Although there were just 2 sites with T5/T8s, the total quantity verified on-site was 27 percent more than reported in the tracking data.

Table 66: Phone and On-site Visit Verification – FRE Residential

	On-site Visit				Phone Survey			
	Equipment Reported		Equipment Verified		Equipment Reported		Equipment Verified	
Measures	Sites	Quantity	Quantity	Percent	Sites	Quantity	Quantity	Percent
CFLs	22	49	58	118%	195	649	495	76%
CFL Fixtures	18	50	39	78%	174	653	427	65%
Thermostats	11	11	11	100%	110	110	93	85%
T5/T8s	2	279	355	127%	16	308	302	98%
Total	23	389	463	119%	200	1,720	1,317	77%

The initial plan for the evaluation was to analyze the on-site and phone verification results and create an adjustment using data from both sources. The phone survey results, however, differed substantially from the on-site results across the various Partnerships. In some cases the phone verification rate was greater than the on-site rate while in other cases the phone verification rate was less than the on-site rate. These differences occurred across both Partnerships and measures. Due to this wide variability and the lack of a consistent trend, we did not use the phone survey data for the verification rates and relied only on the on-site data as we believe that the on-site data are more accurate for verification purposes.

Verification adjustment factors for use in the net impact analysis were developed using the following method. For those measures that were found at more than 10 sites, the measure-specific verification rate is used. For those measures that had a sample of 10 sites or less, the overall average on-site verification rate was applied for that Partnership. While 10 sites is still a relatively small sample, we believe that the benefits of using a measure-specific adjustment factor outweigh the uncertainty of the small sample. Finally, if the verification rate was greater than 100 percent, it was capped at 100 percent as it was not possible to determine if the additional measures were installed through the Partnership program, some other efficiency program, or purchased by the participant outside any efficiency program. Therefore, to be conservative the verification rate is capped at 100 percent. The resulting verification rate is used to adjust impacts at the measure level as part of the net realized impacts calculations discussed at the end of this section.

Participant Satisfaction with Program

Shown in Table 67 are the satisfaction scores for various program elements. The overall satisfaction level was high (9.0 out of 10) and all elements scored well (8.6 to 9.2 out of 10). On a relative basis, the installation process scored the highest (9.2) and had very low levels of dissatisfaction (only 1 percent gave anything less than a 5). Interaction with program staff was similarly high (9.1) with few discontent respondents (3 percent rating less than 5). Respondents were also generally satisfied with the information provided about the program (8.9). Despite participant concerns about realizing expected billing savings (see Table 62 – Respondent Beliefs), customer satisfaction with bill savings was also high (8.6) with only 7 percent giving a

score of less than 5. Compared to the other questions, however, there was a larger percentage of respondents in the Refused/Don't Know category, which means they are unsure if they have saved money on their bills.

Table 67: Satisfaction with Program Elements – FRE Residential

Rating Scale: 1 = Extremely Dissatisfied, 10 = Extremely Satisfied	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK %	N=	Average
Overall satisfaction with the program experience	2	1	1	2	1	2	5	9	9	68	1	200	9.0
Information provided about the program	1	1	1	1	5	1	6	10	8	62	3	200	8.9
Interaction with program staff	2	0	1	0	1	1	6	7	11	67	3	200	9.1
Bill savings	4	1	2	0	5	3	4	9	4	51	17	200	8.6
Installation process	1	0	0	0	3	2	4	9	9	66	6	200	9.2

SAT2-30. On a scale of 1 to 10 where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Table 68 shows that 68 percent of all respondents are more likely to make future energy efficiency improvements after participating in the program. In separate survey questions, 80 percent of respondents that installed CFL lighting said they plan to continue using CFLs as their existing lights burn out or fail, and among this group, 67 percent indicated that the program was very influential in their decision to use CFLs in the future.

Table 68: Future Energy Efficient Installations – FRE Residential

Response (n = 200)	% Of Respondents
More likely	68%
Less likely	3%
Same	20%
Refused/Don't Know	9%

PE11: Are you more or less likely to install energy-efficiency products as a result of your experience with this program?

Self-Reported Free Ridership

Table 69 shows the responses to two separate questions regarding what would have been done in absence of the program. The first question asks respondents directly what they would have done in absence of the program. The second question was asked separately to determine which respondents were considering installing energy efficiency equipment prior to learning about the Partnership. In developing a free ridership estimate, we assigned full and partial free ridership rates as follows:

- Those that claim they would have purchased the same equipment at the same time, and were already considering installing the equipment are full free riders.
- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment before they learned about the program are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, and were already considering installing the equipment are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, but were not considering installing the equipment before they learned about the program are partial free riders, at 25 percent.
- Those that claim they would have not have purchased equipment, or would have purchased standard equipment are net participants (no free ridership).

For the residential measures in the Fresno Partnership, the self-reported free ridership rate is 17.2 percent. This is generally consistent with the free ridership rates currently used for the Fresno Partnership. The net-to-gross ratios currently assumed for these residential measures range from 0.80 to 0.89, which implies free ridership rates of 11 to 20 percent (or more if there is any program spillover).

Table 69: Self-Reported Free Ridership – FRE Residential

What type of equipment would you have purchased had the rebate not existed?	Before you learned about the program, were you already considering purchasing the measure?	Measures	Quantity Weighted Percent	Contribution to Free Ridership
None	Yes	156	11.2%	0.0%
	No	511	36.6%	0.0%
Standard Equipment	Yes	59	4.2%	0.0%
	No	300	21.5%	0.0%
Same Energy Efficient Equipment, Later	Yes	124	8.9%	4.4%
	No	60	4.3%	1.1%
Same Energy Efficient Equipment, Now or Earlier	Yes	142	10.2%	10.2%
	No	43	3.1%	1.5%
Total		**1,395**	**100.0%**	**17.2%**

For the self-reported free ridership estimates, the results are sensitive to the weights applied to the partial free ridership responses. We have used a weight of 50 percent for partial free riders and 25 percent for partial free riders that were not considering purchasing equipment prior to

speaking with a technician about the Partnership. Any such weighting scheme is somewhat arbitrary and these weights were chosen as they are generally consistent with other evaluation studies (such as Express Efficiency) and seemed to be reasonable assumptions for this program.

To test how sensitive the results are to the partial free ridership weighting assumptions, we also calculated free ridership rates using a lower weight for partial free riders. This weighting scheme applies a 50 percent reduction to the weights already assigned (25 percent for partial free riders and 12.5 percent for those that were not considering purchasing equipment prior to their involvement with the Partnership). With these lower rates, the estimated free ridership for CFLs falls from 23 percent to 19 percent. Similarly, for CFL Fixtures the rate falls from 13 percent to 9 percent.

A similar sensitivity test was done by increasing the weights 50 percent for partial free riders. To calculate a higher bound for the estimate, a weight of 75 percent was used for partial free riders and 37.5 percent for partial free riders that were not considering purchasing equipment prior to learning about the program. With this weighting increase, the estimated free ridership rate for CFLs increases from 23 percent to 26 percent. For CFL Fixtures, the free ridership rate increases from 13 percent to 17 percent.

The sensitivity analysis just discussed is summarized in Table 70. Although the weight ranges used for the sensitivity analysis are also arbitrarily chosen, they do provide useful information on how much the free ridership rates might vary under alternative assumptions. Note that these results do not account for any additional error that may be introduced by response bias previously discussed for these types of questions.

Table 70: Free Ridership Sensitivity Analysis – FRE Residential

Free Ridership Weighting Scheme	All Measures	CFL	CFL Fixtures	Thermostats	Other Measures
Current Weighting (Partial FR weight=50%, 25%)	17.2%	22.8%	13.3%	9.1%	14.9%
Low Weighting (Partial FR weight=25%, 12.5%)	13.7%	19.7%	9.4%	6.8%	9.9%
High Weighting (Partial FR weight= 75%, 37.5%)	20.8%	25.9%	17.1%	11.4%	19.8%

NET IMPACT RESULTS – FRE RESIDENTIAL

The preceding information regarding self-reported free ridership and installation verification is used to adjust the *ex ante* gross impacts to determine the *ex post* net realized impacts for the residential portion of the Fresno Partnership. The specific adjustments and the effect on net realized impacts for both energy and demand are discussed below.

2004-05 Cumulative kWh Impacts – FRE Residential

The adjustment factors used to determine *ex post* net realized impacts from the *ex ante* gross impacts are shown in Table 49. Free ridership adjustments are derived from the survey data discussed in the previous section. We were able to develop separate free ridership adjustment factors for the CFLs and CFL Fixtures. For the others we apply the average self-reported free ridership adjustment derived from the survey data from the Fresno residential participants.

Finally, we adjust savings based on the verification rate developed from the on-site audit data. We used the observed verification rates obtained during the on-sites for CFLs, CFL Fixtures, and Thermostats. For all other measures we use the average overall verification rate of 1.00.

Table 71: *Ex Post* Net Realization Rates for kWh Impacts – FRE Residential

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.77	1.00	0.77
CFL Fixtures	0.87	0.78	0.68
Thermostats	0.91	1.00	0.91
Other Measures	0.85	1.00	0.85

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 72. Note that this table shows the change in the *ex ante* and *ex post* net savings, while Table 71 shows the change from *ex ante* gross impacts to *ex post* net impacts. For example, with CFLs the *ex post* net impacts are 77 percent of *ex ante* gross impacts (as shown in Table 71), or a reduction of 23 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is slightly less at a 14 percent reduction (as shown in Table 72).

Table 72: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – FRE Residential

Measure	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	398,164.0	354,366.0	306,586.3	-13.5%
CFL Fixtures	730,536.0	650,177.1	495,741.8	-23.8%
Thermostats	162,653.5	144,761.6	148,014.7	2.2%
Faucet Aerators	4,292.3	3,820.1	3,648.4	-4.5%
Reflectors/Delamping	858.0	763.6	729.3	-4.5%
Low Flow Shower Heads	3,495.8	3,111.3	2,971.4	-4.5%
Total	1,299,999.6	1,156,999.7	957,691.9	-17.2%

2004-05 Cumulative kW Impacts – FRE Residential

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 51. As with the kWh impacts, the kW impacts are adjusted to account for verification, free ridership, and the *ex post* net realization rate is the product of the adjustment factors shown in the table.

Table 73: *Ex Post* Net Realization Rates for kW Impacts – FRE Residential

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.77	1.00	0.77
CFL Fixtures	0.87	0.78	0.68
Thermostats	0.91	1.00	0.91
Other Measures	0.85	1.00	0.85

The same issues relating to uncertainty discussed with the kWh impacts also apply to the *ex post* kW impacts. For example, there is uncertainty regarding the survey responses used for the self-reported free ridership due to the weighting scheme and the potential for response bias with these types of questions.

Table 74 shows the final *ex post* kW impacts for the residential component using the adjustment factors from Table 73. A similar comparison for therms is shown in Table 75.

Table 74: Change in *Ex Ante* and *Ex Post* Net kW Impacts – FRE Residential

Measure	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	61.0	54.3	47.0	-13.5%
CFL Fixtures	82.4	73.3	55.9	-23.8%
Thermostats	252.1	224.4	229.4	2.2%
Faucet Aerators	0.63	0.56	0.54	-4.5%
Reflectors/ Delamping	0.11	0.09	0.09	-4.5%
Low Flow Shower Heads	0.53	0.47	0.45	-4.5%
Total	396.8	353.2	333.4	-5.6

Table 75: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – FRE Residential

Measure	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
Thermostats	44,347.5	39,469.3	40,356.2	2.2%
Faucet Aerators	1,236.8	1,100.7	1,051.2	-4.5%
Low Flow Shower Heads	3,819.6	3,399.4	3,246.7	-4.5%
Total	49,403.9	43,969.4	44,654.1	1.6%

The impact table required by the CPUC, showing kWh, kW, and therm savings over time (commercial and residential combined) and taking into account the expected useful life for each measure, is included in *Appendix A*.

SURVEY RESULTS – FRE COMMERCIAL

For the commercial portion of the Fresno Partnership, 186 participants were surveyed from the Small and Medium Size Business Direct Install Program. Key findings from these surveys are presented below.

Firmographic Summary

As shown in Table 76, of the 186 commercial respondents, 58 percent rent their business facility and 42 percent own their facility.

Table 76: Business Ownership – FRE Commercial

Response (n = 186)	% Of Respondents
Rent	58%
Own	42%
Refused/Don't know	0%

RENT5: Does your business own, lease or rent the facility?

Table 77 shows that 85 percent of the businesses surveyed have 10 or fewer employees, and 74 percent have 5 or fewer employees. The high rate of small business respondents is not surprising and confirms that the program has been successful in reaching this target market.

Table 77: Number of Employees – FRE Commercial

Response (n = 186)	% Of Respondents
1 to 5	74%
6 to 10	11%
11 to 20	8%
21 to 50	3%
51 to 100	0%
Greater than 100	0%
Refused/Don't Know	3%

FIRM5: Which of the following categories describes the number of employees your firm has at this address?

Partnership Awareness and Participant Motivations

Commercial respondents were asked to indicate how they first became aware of the Partnership program, and the results are shown in Table 78. The largest group of respondents (43 percent) learned of the program from the technician that provided the equipment.

Table 78: Source of Program Awareness – FRE Commercial

Response (n = 186)	% Of Respondents
From technician that installed/provided the equipment	43%
Other	34%
Other business, word of mouth, friend, or relative	10%
Don't know	5%
Local government	4%
Mail	2%
Found independently	2%

A25: How did you first become aware of the program?

The most commonly cited reasons for participating in the program were to save money on electric bills (78 percent) and to receive free equipment (22 percent). Table 79 shows in more detail a summary of the responses (respondents were allowed to provide multiple responses).

Table 79: Reasons for Participation – FRE Commercial

Response (n = 186)	% Of Respondents
Saving money on electric bills	78%
Other	25%
To receive free equipment	22%
Energy crisis	16%
Replacing old or broken equipment	9%
Acquiring the latest technology	8%
Helping protect the environment	4%
Recommended by utility account representative	3%

A28: Why did your company participate in the program?

As shown in Table 80, most of the commercial participants considered both utility and local government sponsorship to be important. When asked about local government sponsorship, 70 percent indicated that it was "Very important" for their participation decision, while 81 percent said that PG&E sponsorship was "Very important." This suggests that the Partnership model is having a positive influence on participation.

Table 80: Importance Of Government Sponsorship – FRE Commercial

Response (n = 186)	Local Government	PG&E
Very important	70%	81%
Somewhat important	18%	12%
Not at all important	9%	5%
Refused/Don't know	3%	1%

SPON1: In deciding to participate in the [PARTNERSHIP_NAME] program, how important was it to you that [LOCAL_GOVERNMENT] sponsored the program? Would you say it was…

SPON3: How important was it to you that PG&E sponsored the program? Would you say it was. . .

Table 81 shows the responses to a series of attitudinal questions regarding potential barriers to installing energy efficient equipment (a score of 10 = "Agree Completely," 1 = "Disagree Completely"). In the discussion below, ratings of 8 or higher were considered as "strongly agree" while ratings of 3 or less were viewed as "strongly disagree."

When asked if they were concerned bill savings will be less than what was estimated, 34 percent agreed (rated 8 or above) while 22 percent disagreed (rated 3 or below). This question had the highest level of general agreement among all respondents, with an average rating of 6.1.

Thirty-two percent of the respondents agreed that they did not have the information needed to make informed decisions about energy efficiency investments, while 29 percent felt that they were fairly well informed. There was less concern about perceived "hassles" in selecting a qualified contractor, with 32 percent disagreeing that there is too much hassle compared to 28 percent who agree.

The respondents generally agreed that insufficient financing is a barrier to making energy efficient investments. Thirty-six percent agreed with this statement, compared with 28 percent who disagreed. This suggests that initial installation costs may remain a significant hurdle for small businesses, and supports the program theory assumption that a direct install program is needed to get these customers to adopt energy efficient measures.

The last three statements in Table 81 only include the responses of business renters. Forty-nine percent of renters strongly disagreed with the statement that they would not be in the building for long, and 42 percent disagreed with the statement that it's not worth investing because it's not their building. This contradicts the commonly held belief that small commercial customers are resistant to making investments in energy efficient equipment when they do not own their building.

Table 81: Respondent Beliefs About Energy Efficient Products – FRE Commercial

Rating Scale: 1 = Disagree Completely, 10 = Agree Completely	1%	2%	3%	4%	5%	6%	7%	8%	9%	10 %	R/DK %	N=	Average
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	15	3	4	2	16	4	7	6	4	24	16	186	6.1
I don't have the information I need to make an informed decision about energy efficient investments.	19	5	5	2	16	3	6	9	3	20	12	186	5.6
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	26	3	3	3	18	3	4	6	1	21	12	186	5.1
Lack of financing is a barrier to our organization making energy efficiency investments that we want to make.	21	4	3	2	15	5	5	11	3	22	11	186	5.7
Getting a utility rebate is too much hassle.	35	3	4	3	10	2	4	6	1	19	14	186	4.6
The space in rented and I need the owner's consent to make improvements.*	18	4	6	1	9	1	2	7	1	44	8	107	6.7
I'm not at this location for long.*	40	4	5	2	9	3	6	5	0	14	13	107	4.0
It's not worth investing because it's not my building.*	31	7	4	3	15	1	2	4	2	21	12	107	4.7

PE35A-H: How well do each of the following statements describe your beliefs about energy efficiency investments?

* Results are shown for renters only.

Table 82 shows the degree to which commercial survey respondents recalled referrals to other energy conservation programs by the Fresno Partnership staff. Most respondents (89 percent) were unaware of any other energy efficiency program. Of the remainder that were aware, only a fraction (1 percent of all respondents) recalled being referred to other programs by Partnership staff. As with the residential customers for this Partnership, respondents are generally not retaining any information received about other programs and participants remain generally unaware of other program opportunities.

Table 82: LGP Referrals To Other Energy Efficiency Programs - FRE Commercial

Response (n = 186)	% Of Respondents
Not aware of other programs	89%
Yes, referred by Partnership	1%
No, not referred by Partnership	8%
Don't Know	2%

A30: Besides the program, are you aware of other programs that are designed to promote energy efficiency?

A32: Did anyone from the [PARTNERSHIP_NAME] program recommend that you participate in any other energy conservation program?

Measure Installation Verification

Table 83 shows that among the commercial customers surveyed, the vast majority (96 percent) had the equipment installed by the program rather than dropped off. This high rate of partner installed measures results in greater confidence that these measures are installed properly and are producing savings.

Table 83: Equipment Installation Method – FRE Commercial

Response (n = 186)	% Of Respondents
Yes, program installed equipment	96%
No, equipment dropped off	3%
Don't Know	2%

VER10: Did someone from the program install all of the products, or were they given to you for you to install later?

Table 84 shows the share of respondents that had some of installed measures removed, either for equipment failure or other reasons. Respondents indicated that only 3 percent had removed CFL bulbs, while over 15 percent had removed T5/T8 lighting and/or sensors installed through the program.

Note that Table 84 shows the share of *respondents* with failed or removed measures. Subsequent tables show the results of additional verification questions that address the share of *measures* that are no longer in place. The results that are a function of the share of measures are the ones that are used later in this section to adjust the net impacts for this Partnership.

Table 84: Failure Rate of Installed Measures – FRE Commercial

Measure	Failed/Removed	No Problems	R/DK
	%	%	%
CFL Bulb (n = 130)	3%	95%	2%
T5/T8 (n = 177)	16%	81%	3%
Exit Sign (n = 9)	0%	100%	0%
Sensor (n = 53)	21%	75%	4%
Thermostat (n = 21)	5%	81%	14%

RET20: Have any of those [M_DESC] installed failed or been removed?

Additional questions were asked to differentiate CFL bulbs that were removed because of failure and those that were removed for non-failure reasons (e.g., a remodeling required the removal, the equipment was upgraded, light too bright or dim). No CFL bulbs were removed for non-failure reasons.

Table 85 below shows the results for both the phone survey verification and the on-site visit verification. The first column in each section shows how many sites had each of the measures listed. In addition to CFLs, CFL Fixtures, Thermostats, and T5/T8s, there are other miscellaneous measures that have been omitted from the table.

The second column displays the quantity of measures as it was reported in the PG&E tracking database. The third column shows the quantity of each measure that could be verified either by the verifier on-site, or by the respondent over the phone. The percentage shown in the fourth column shows the percent verified of the sites visited or interviewed. If a percentage is greater than 100 percent, additional measures were found installed that were not included in the PG&E tracking data for this program. It is unclear if this is due to errors in coding of these measures in the system or if these measures were installed through other programs.

The on-site visits for the commercial part of the Fresno Partnership verified 82 percent of the quantities for CFLs and T5/T8s combined. The chief measure for the program is the T5/T8 and it received an 87 percent verification result. The CFLs had a much lower on-site verification rate of 48 percent.

The same verification rate methodology discussed for the residential measures is also used for the commercial measures. For those measures that were found at 10 or more sites, the measure-specific verification rate is used in the net impact calculations. For those found at less than 10 sites, the overall average on-site verification rate is used for that Partnership. All verification rates are capped at 100 percent to avoid crediting the Partnership with measures installed outside the program.

Table 85: Phone and On-site Visit Verification – FRE Commercial

	On-site Visit				Phone Survey			
	Equipment Reported		Equipment Verified		Equipment Reported		Equipment Verified	
Measures	Sites	Quantity	Quantity	Percent	Sites	Quantity	Quantity	Percent
CFLs	10	50	24	48%	138	1,520	1,554	102%
Thermostats	0	0	0		23	31	27	87%
T5/T8s	9	404	350	87%	180	8,744	8,687	99%
Total	11	454	374	82%	186	10,295	10,268	100%

Participant Satisfaction with Program

Table 86 shows the commercial customer satisfaction with various aspects of the Fresno Partnership. For the most part, participants were satisfied with their overall program experience, with an average satisfaction rating of 8.9 (on a 10-point scale), and 83 percent providing a satisfaction rating of 8 or higher.

The installation process received an average score of 9.0. The high satisfaction of the installation process likely reflects the high percentage of installations done by the partnership, as opposed to leaving the equipment for the participants to install. The audit process and interaction with program staff also recorded high satisfaction levels of 9.0.

Satisfaction with bill savings received the lowest ratings, with an average rating of 8.0. Fifty-seven percent of respondents gave bill savings a satisfaction rating of 8 or higher, with 39 percent giving a rating of 10. Seven percent of respondents, however, were completely dissatisfied with their bill savings, the highest level of dissatisfaction recorded for the various program elements. Compared to the other questions, there was a larger percentage of respondents in the Refused/Don't Know category indicating uncertainty as to whether the measures were actually resulting in bill savings.

Table 86: Respondent Satisfaction With Program – FRE Commercial

Rating: 1 = Extremely Dissatisfied, 10 = Extremely Satisfied	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK/NA %	n =	Average
Overall satisfaction with the program experience	2	1	0	0	6	2	4	11	13	59	3	186	8.9
Information provided about the program	2	1	1	0	7	4	4	20	9	48	5	186	8.6
Interaction with program staff	1	1	0	0	3	3	4	17	10	58	5	186	9.0
Bill savings	7	1	0	0	5	2	4	13	6	38	23	186	8.0
Audit Process	1	0	0	0	3	2	4	16	7	46	21	186	9.0
Installation process	2	1	0	1	3	1	4	14	12	61	3	186	9.0

SAT2-30. On a scale of 1 to 10 where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Table 87 shows that 71 percent of all respondents are more likely to make future energy efficiency improvements after participating in the program. In separate survey questions, 80 percent of respondents that installed CFL lighting said they plan to continue using CFLs as their existing lights burn out or fail, and among this group, 63 percent indicated that the program was very influential in their decision to use CFLs in the future.

Table 87: Future Energy Efficient Installations – FRE Commercial

Response (n = 186)	% Of Respondents
More likely	71%
Less likely	6%
Same	19%
Refused/Don't Know	4%

PE11: Are you more or less likely to install energy-efficiency products as a result of your experience with this program?

Self-Reported Free Ridership

Table 88 shows the responses to two separate questions regarding what would have been done in the absence of the program. The first question asks respondents directly what they would have done in the absence of the program. The second question was asked separately to determine which respondents were considering installing energy efficiency equipment prior to learning about the Partnership. In developing a free ridership estimate, we assigned full and partial free ridership rates as follows:

- Those that claim they would have purchased the same equipment at the same time, and were already considering installing the equipment are full free riders.

- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment before they learned about the program are partial free riders, at 50 percent.

- Those that claim they would have purchased the same equipment at a later time, and were already considering installing the equipment are partial free riders, at 50 percent.

- Those that claim they would have purchased the same equipment at a later time, but were not considering installing the equipment before they learned about the program are partial free riders, at 25 percent.

- Those that claim they would have not have purchased equipment, or would have purchased standard equipment are net participants (no free ridership).

For the commercial measures in the Fresno Partnership, the self-reported free ridership rate is 14.3 percent. This is higher than most of the free ridership rates currently used for the Fresno Partnership. The net-to-gross ratios currently used for the most common measures range from 0.89 to 0.96, which translates to a free ridership rate ranging from 4 to 11 percent or more.

Table 88: Installation Intent and Timing Without Program – FRE Commercial

What type of equipment would you have purchased had the rebate not existed?	Before you learned about the program, were you already considering purchasing the measure?	Measures	Quantity Weighted Percent	Contribution to Free Ridership
None	Yes	417	3.1%	0.0%
	No	4746	35.5%	0.0%
Standard Equipment	Yes	957	7.2%	0.0%
	No	4,216	31.5%	0.0%
Same Energy Efficient Equipment, Later	Yes	1,063	8.0%	4.0%
	No	577	4.3%	1.1%
Same Energy Efficient Equipment, Now or Earlier	Yes	1,079	8.1%	8.1%
	No	313	2.3%	1.2%
Total		**13,368**	**100.0%**	**14.3%**

As discussed below, the self-reported free ridership rate for CFLs is 32 percent, which is higher than the 4 percent currently used for the *ex ante* impact estimates. For T8/T5s, the self-reported free ridership is 13 percent, which is also higher than the 4 percent currently assumed by the program.

For the self-reported free ridership estimates, the results are sensitive to the weights applied to the partial free ridership responses. We have used a weight of 50 percent for partial free riders

and 25 percent for partial free riders that were not considering purchasing equipment prior to speaking with a technician about the Partnership. Any such weighting scheme is somewhat arbitrary and these weights were chosen as they are generally consistent with other evaluation studies (such as Express Efficiency) and seemed to be reasonable assumptions for this program.

To test how sensitive the results are to the partial free ridership weighting assumptions, we also calculated free ridership rates using a lower weight for partial free riders. This weighting scheme applies a 50 percent reduction to the weights already assigned (25 percent for partial free riders and 12.5 percent for those that were not considering purchasing equipment prior to their involvement with the Partnership). With these lower rates, the estimated free ridership for CFLs falls from 32 percent to 26 percent and for T8/T5s the rate falls from 13 percent to 10 percent.

A similar sensitivity test was done by increasing the weights 50 percent for partial free riders. To calculate a higher bound for the estimate, a weight of 75 percent was used for partial free riders and 37.5 percent for partial free riders that were not considering purchasing equipment prior to learning about the program. With this weighting increase, the estimated free ridership rate for CFLs increases from 32 percent to 26 percent. For T8/T5s, the free ridership rate increases from 13 percent to 15 percent.

The sensitivity analysis just discussed is summarized in Table 89. Although the weight ranges used for the sensitivity analysis are also arbitrarily chosen, they do provide useful information on how much the free ridership rates might vary under alternative assumptions. Note that these results do not account for any additional error that may be introduced by response bias previously discussed for these types of questions.

Table 89: Free Ridership Sensitivity Analysis – FRE Commercial

Free Ridership Weighting Scheme	All Measures	CFL	T5/T8	Other Measures
Current Weighting (Partial FR weight=50%, 25%)	14.3%	31.7%	12.5%	13.7%
Low Weighting (Partial FR weight=25%, 12.5%)	11.2%	25.7%	9.7%	9.1%
High Weighting (Partial FR weight= 75%, 37.5%)	17.4%	37.7%	15.2%	18.3%

NET IMPACT ANALYSIS – FRE COMMERCIAL

The preceding information regarding self-reported free ridership, operating hours, and installation verification is used to adjust the *ex ante* gross impacts to determine the *ex post* net realized impacts for the commercial components of the Fresno Partnership. The specific adjustments and the effect on net realized impacts for both energy and demand are discussed below.

2004-05 Cumulative kWh Impacts – FRE Commercial

As discussed in the *General Evaluation Findings* section of this report, the operating hour assumption for the commercial lighting measures is likely higher than the operating hours actually realized for small businesses targeted by this Partnership. (See the discussion of this

issue in *Chapter 3* of this report.) To correct for this, we apply an adjustment to the savings for CFLs, T8/T5s, and CFL Fixtures.

The adjustment factors used to determine *ex post* net realized impacts from the *ex ante* gross impacts are shown in Table 90. Free ridership adjustments are derived from the survey data discussed in the previous section. We were able to develop separate free ridership adjustment factors for the CFL and T8/T5 measures. For the others we apply the average self-reported free ridership adjustment derived from the survey data from the Fresno commercial participants.

Finally, we adjust savings based on the verification rate developed from the on-site audit data. Given the small on-site sample, we use the overall verification rate of 0.82 to adjust for persistence for all measures.

Table 90: *Ex Post* Net Realization Rates for kWh Impacts – FRE Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Operating Hours Adjustment	Verification	*Ex Post* Net Realization Rate
CFLs	0.78	0.44	0.82	0.28
T5/T8	0.87	0.58	0.82	0.41
Other Measures	0.87	1.00	0.82	0.71

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 91. The largest reductions from the original *ex ante* gross impacts are in the T8/T5 and CFL categories and also comprise the majority of the savings. These savings from the original planning estimates are largely due to the reduced operating hour adjustment based on the results of other evaluations regarding small business customers.

Note that Table 91 shows the change in the *ex ante* and *ex post* net savings, while Table 90 shows the change from *ex ante* gross impacts to *ex post* net impacts. For example, with the T8/T5 measure group the *ex post* net impacts are 41 percent of *ex ante* gross impacts (as shown in Table 90), or a reduction of 59 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is slightly less at a 57 percent reduction (as shown in Table 91).

Table 91: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – FRE Commercial

Measure	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	2,822,386.9	2,709,491.5	692,455.7	-74.4%
T5/T8	1,946,110.8	1,868,266.3	805,246.1	-56.9%
Thermostats	785,856.0	754,421.8	554,185.7	-26.5%
Exit Signs	53,055.4	50,933.1	37,414.6	-26.5%
Sensors	612,773.3	588,262.3	432,127.7	-26.5%
Total	6,220,182.3	5,971,375.0	2,521,429.8	-57.8%

2004-05 Cumulative kW Impacts – FRE Commercial

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 92. As with the kWh impacts, the kW impacts are adjusted to account for verification, free ridership, and the *ex post* net realization rate is the product of the adjustment factors shown in the table.

Table 92: *Ex Post* Net Realization Rates for kW Impacts – FRE Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.78	0.82	0.64
T5/T8	0.87	0.82	0.71
All Other Measures	0.87	0.82	0.71

The same issues relating to uncertainty discussed with the kWh impacts also apply to the *ex post* kW impacts. For example, there is uncertainty regarding the survey responses used for the self-reported free ridership due to the weighting scheme and the potential for response bias with these types of questions.

Table 93 shows the final *ex post* kW impacts for the commercial component using the adjustment factors from Table 92. Table 94 shows the same comparisons for therm impacts.

Table 93: Change in *Ex Ante* and *Ex Post* Net kW Impacts – FRE Commercial

Measure	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	450.7	432.7	251.3	-41.9%
T5/T8	361.1	346.7	257.6	-25.7%
Exit Signs	6.4	6.1	4.5	-26.5%
Sensors	296.2	284.4	208.9	-26.5%
Total	1,114.5	1,069.9	722.4	-32.5%

Table 94: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – FRE Commercial

Measure	PG&E Gross Savings (Therm)	PG&E Net Savings (Therm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
Thermostats	210,240.0	201,830.4	148,261.2	-26.5%

The impact table required by the CPUC, showing kWh, kW, and therm savings over time (commercial and residential combined) and taking into account the expected useful life for each measure, is included in *Appendix A*.

The following tables show a comparison of net program impacts for each of the Fresno Partnership components (both residential and commercial).

Table 95: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – FRE Programs

Program	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
FRE – Multi-Family (Direct Install)	583,807.3	519,588.5	432,792.2	-16.7%
FRE – Single-Family (Direct Install)	716,192.3	637,411.1	524,899.7	-17.7%
FRE – Small Biz (Direct Install)	622,0182.3	5,971,375.0	2,521,429.8	-57.8%
Total	7,520,182.0	7,128,374.7	3,479,121.7	-51.2%

Table 96: Change in *Ex Ante* and *Ex Post* Net kW Impacts – FRE Programs

Program	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
FRE – Multi-Family (Direct Install)	192.5	171.4	165.1	-3.6%
FRE – Single-Family (Direct Install)	204.3	181.8	168.3	-7.5%
FRE – Small Biz (Direct Install)	1,114.5	1,069.9	722.4	-32.5%
Total	1,511.3	1,423.1	1,055.8	-25.8%

Table 97: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – FRE Programs

Program	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
FRE – Multi-Family (Direct Install)	26,324.3	23,428.6	23,878.2	1.9%
FRE – Single-Family (Direct Install)	23,079.6	20,540.8	20,775.9	1.1%
FRE – Small Biz (Direct Install)	210,240.0	201,830.4	148,261.2	-26.5%
Total	259,643.9	245,799.8	192,915.4	-21.5%

CONCLUSIONS AND RECOMMENDATIONS

From the analysis presented above, the following conclusions are drawn for the Fresno Partnership:

- **Reporting requirements must include contact information.** As discussed below, Partnerships are not required to submit participant contact information. This has made phone surveys and on-site verification difficult as we can only contact a portion of the customers for each Partnership.

- **Participant satisfaction is high.** The commercial and residential customers we surveyed were generally pleased with their Fresno Partnership experience and gave high satisfaction ratings to the program overall and to individual program elements discussed during the phone survey.

- **The Partnership has been generally successful in reaching its target customer groups.** As shown in the survey results, the Partnership has been successful in reaching a significant amount of renters, low-income households, small businesses and non-English

customer groups. These findings help support the program theory that the current program design is an effective way to recruit these traditionally hard-to-reach customer groups.

- **Both PG&E and local government sponsorship are considered important.** Participants overwhelmingly agreed that PG&E and local government sponsorship was important. For residential participants, 87 percent rated PG&E sponsorship as "Very Important," while 80 percent gave the same rating to local government sponsorship. Similarly, 81 percent of the commercial participants gave a "Very Important" rating to PG&E sponsorship and 70 percent gave the same rating to local government involvement.

- **Renters may have more control over energy efficiency investments than originally assumed.** For residential renters, 51 percent disagreed with the statement that it was not worthwhile to invest in energy efficiency since they did not own the building. Of commercial participants, 42 percent strongly disagreed with the same statement. Similarly, 23 percent of residential renters and 28 percent of commercial renters strongly disagreed with the statement saying that they needed to get the owner's consent prior to making energy efficiency improvements to their building.

- **Participants still have very low awareness of other energy efficiency programs.** The vast majority of participants are unaware of other energy efficiency programs. Of those that are aware, very few recalled having programs recommended to them by the Partnership staff they interacted with. This indicates that any Partnership efforts to increase participant awareness of other programs have had little or no effect.

- **Self-reported free ridership rates are slightly higher than rates currently used**. The survey questions used to estimate free ridership typically resulted in values that were higher than what is currently assumed for these programs.

Based on these conclusions, the following are recommendations for the Fresno Partnership:

- **Continue with the current program implementation method.** The process evaluation showed that the key elements of the program theory were supported through the existing program delivery method. Customer satisfaction is also high for all program elements. As long as this can be maintained and net savings are achieved, we see no reason why the current program design should be modified except as indicated in the other evaluation recommendations presented in this report.

- **Commercial operating hour assumptions need to be revised for T8/T5s and CFLs.** The current assumptions for annual operating hours are much higher than those found in comparable studies using on-site audit data and logger data for similar small business customers. Correcting for the operating hours substantially lowers the net *ex post* kWh and kW impacts for these measures in the commercial sector.

- **A separate study should be conducted to revise the operating hour assumptions used in the DEER database for small businesses.** A review of the DEER database revealed that in general the operating hours assigned for small businesses for T8/T5s and CFLs are

higher than what has been observed for small business customers in this and other evaluation studies. However, the DEER database also delineates operating hours by business type and there is significant variation in operating hours across business categories. There was not a large enough sample of on-sites in this evaluation to produce separate operating hour estimates for each of the business types currently supported in the DEER database. We recommend a separate study be conducted to address this issue, as it appears that the current operating hour assumptions are generally too high for small business customers for T8/T5s and CFLs.

- **Require that full contact information be required for program tracking.** Currently, PG&E does not require that full contact information be reported for its Partnership, which hampered the evaluation effort and led to a more costly survey effort than originally planned. We strongly recommend that complete contact information (contact name, address, phone number) become a reporting requirement for each Partnership.

- **Improve program referral methods.** If referral to other efficiency programs is to remain a criterion for this Partnership, then the referral methods need to be improved. Possibilities for increasing program awareness include leaving program informational materials with customers, providing a checklist of other measures that could be replaced match with a list of related programs, and follow-up phone calls from other programs to recruit these customers for additional measure installations.

6. CITY OF STOCKTON

PROGRAM BACKGROUND

The following program description is based on our review of the Program Implementation Plan, staff interviews, and reviews of the monthly reports.

The City of Stockton and Pacific Gas and Electric Company worked together to deliver the Stockton Smart Energy Program (SSEP), which was specifically designed for residents and businesses located in Stockton's historic Midtown-Magnolia District, Airport Corridor and Downtown Redevelopment Area. These areas all have sizable hard-to-reach (HTR), non-English speaking, elderly and disabled citizen populations. This Partnership coordinated with City Action Teams (CATs) that had previously been established by the City to rebuild and revitalize segments of the community. Additionally, the Partnership coordinated with PG&E's statewide and local energy efficiency programs.

Specific program components for the City of Stockton Partnership are discussed briefly below.

Single-Family and Multi-Family Home Direct Install Program

This program element targeted HTR limited-income single and multi-family residences and was implemented by Western Insulation. Energy-efficiency experts canvassed neighborhoods and identified single- and multi-family homes that qualify for the installation of free ENERGY STAR® measures such as interior hardwired fluorescent lighting fixtures, compact fluorescent lamps and programmable thermostats. Residents with single-family homes could also receive a free energy analysis to identify how they use energy and ways to conserve. Emphasis was placed on working with moderate-income customers, California Alternate Rates for Energy (CARE) participants and senior citizens. Marketing tools that were used for this and the other program elements included: local government television channel promotions, mailed flyers (in English and Spanish), attendance at industry tradeshows, project area kick-off events, updates to CAT websites, and a winter Holiday Lighting Event (utilizing LED lights).

Energy Audit and Rebate Program for Businesses

This program element targeted small and medium size businesses that lack resources to become more energy efficient. Energy-efficiency experts performed free energy audits to help business customers identify energy-saving opportunities, and initially cash rebates were given to businesses that replaced old lighting equipment with qualifying energy-efficient technologies, and to those that installed occupancy sensors, programmable thermostats or reflective window film. The rebate feature of the program was subsequently changed to include direct installations, as few businesses were using the rebates, and instead preferred to wait until their existing lighting burned out. The business direct installations were contracted to Robert Heath and Associates.

Energy-Efficiency Services and Incentives for Municipal Buildings

Energy consultants surveyed five municipal buildings including the Stockton City Hall, Public Library and Police Station to identify energy-saving opportunities. Energy efficient retrofits were implemented using financial incentives provided through the program.

Codes and Standards Support

PG&E provided several Title 24 training and educational seminars (e.g., Overview of Title 24 Changes, Residential Standards, and HVAC Change-Outs) related to energy codes and standards for existing and future building designs. The courses were targeted to building owners, designers, engineers, architects and building officials in Stockton.

Education and Information Services

PG&E provided energy clinics and classes designed specifically for Stockton's residents and businesses (e.g., Small Business Energy Management, Lighting Fundamentals, Pool Filtration, and Restaurant/Food Services Energy Management). Through these free training classes, residential and business customers received suggestions for reducing their energy bills and operating more energy efficiently.

SURVEY RESULTS – STOCKTON (STK) RESIDENTIAL

For the residential component of the Stockton Partnership, 307 participants were surveyed from the Single-Family and Multi-Family Direct Install components of the program.

Demographic Summary

As shown in Table 98, of the 307 residential survey respondents, 64 percent rent and 34 percent own their homes.

Table 98: Home Ownership – STK Residential

Response (n = 307)	% Of Respondents
Rent	64%
Own	34%
Refused/Don't know	2%

DE1: Do you own or rent your home?

Table 99 shows that over half of the respondents (60 percent) earn $20,000 or less per year, and about 80 percent earn $50,000 or less per year. The high rate of low-income families is not surprising since many of the participants are referred through the CARE program. Nevertheless, this result does indicate that the program has been successful in reaching the low-income residential population.

Table 99: Household Income – STK Residential

Response (n = 307)	% Of Respondents
$20,000 or less	60%
$20,000 to $50,000	20%
$50,000 to $75,000	1%
$75,000 to $100,000	1%
More than $100,000	0%
Refused/Don't Know	18%

DE8: Which of the following best represents your annual household income in 2004, before taxes?

Seventy-nine percent of the respondents primarily speak English in their homes, while 18 percent primarily speak Spanish (Table 100).

Table 100: Language Spoken in Home – STK Residential

Response (n =307)	% Of Respondents
English	79%
Spanish	18%
Other*	3%

DE10: What is the primary language spoken in your home?

* Includes Mandarin, Cantonese, Tagalog, Korean, Vietnamese, Russian, Japanese, Other, and Refused/Don't Know

Partnership Awareness and Participant Motivations

Respondents were asked how they first became aware of the Partnership program, and the results are shown in Table 101. The largest group of respondents (34 percent) learned of the program from the technician that provided the equipment. The next most likely source of program information was through personal contacts.

Table 101: Source of Program Awareness – STK Residential

Response (n = 307)	% Of Respondents
From technician that installed/provided the equipment	34%
Other business, word of mouth, friend, or relative	25%
Other	21%
Mail	8%
Don't Know	7%
Found independently	3%
Local news, radio, or newspaper	2%
School, church, or community organization	<1%

A25: How did you first become aware of the program?

The most commonly cited reasons for participating in the program were to save money on electric bills (73 percent) and to receive free equipment (29 percent). Table 102 shows in more detail a summary of the responses (respondents were allowed to provide multiple responses).

Table 102: Reasons for Participation – STK Residential

Response (n = 307)	% Of Respondents
Saving money on electric bills	73%
To receive free equipment	29%
Other	26%
Energy crisis	10%
Replacing old or broken equipment	9%
Recommended by neighboring business or friend	6%

A28: Why did your household participate in the program?

Sponsorship of the program by PG&E and their local government was also important in the respondents' decision to participate in the program. As shown in Table 103, 81 percent considered it very important that the local government was sponsoring the program, and 87 percent said the same for PG&E.

Table 103: Importance of Government Sponsorship – STK Residential

Response (n = 307)	Local Government	PG&E
Very important	81%	87%
Somewhat important	11%	9%
Not at all important	6%	2%
Refused/Don't know	3%	2%

SPON1: In deciding to participate in the Stockton program, how important was it to you that Stockton sponsored the program? Would you say it was…

SPON3: How important was it to you that PG&E sponsored the program? Would you say it was. . .

Table 104 presents responses to a series of attitudinal questions about energy efficient products. More specifically, respondents were asked if they agreed or disagreed with a series of statements regarding the value of energy efficient products, and the ease or difficulty of procuring them (a score of 10 = "Agree Completely," 1 = "Disagree Completely"). In general, respondents were polarized on most statements with a significant share either completely agreeing or disagreeing.

Respondents generally agreed with the statement "actual bill savings will be less than estimated," with 42 percent strongly agreeing (rating 8 or higher) and 30 percent providing a rating of 10. In contrast, 25 percent of respondents strongly disagreed with the statement on bill savings and gave it a rating of 3 or lower. In regard to equipment costs, 41 percent of respondents strongly agreed with the statement "we were not able to finance the upgrades and pay for them over time." Only 25 percent of respondents strongly disagreed with this statement by giving it a rating of 3 or lower.

Respondents were generally split on whether they had enough information to make informed energy decisions, with 37 percent strongly agreeing with this statement (rating 8 or higher) and 37 percent strongly disagreeing (rating 3 or less). People were least likely to agree with the statement "getting a utility rebate is too much hassle," with 49 percent giving a rating of 3 or less. In comparison, 18 percent strongly agreed with the statement (rating 8 or higher).

The last three statements are different than the other attitudinal questions because they are partially related to household demographics (i.e., home ownership) in addition to perceptions about efficient energy. For these statements, only the responses of home renters are shown. Regarding the statement " the space is rented and I need the owner's consent to make improvements," 62 percent of the renters surveyed strongly agreed (rating 8 or higher) while 26 percent strongly disagreed (rating 3 or lower). In comparison, renters tended to disagree with the statement "I'm not at this location for long," with 50 percent of renters indicating they strongly disagreed. Thirty-two percent of renters said they strongly agreed with this statement. Renters also tended to disagree with the statement "It's not worth investing because it's not my building," with 54 percent saying they strongly disagreed and 27 percent saying they strongly agreed with this statement. These responses suggest that renters may consider energy efficiency investments even if the do need to get the owner's permission prior to making improvements to their building.

Table 104: Respondent Beliefs About Energy Efficient Products – STK Residential

Rating Scale: 1 = Disagree Completely, 10 = Agree Completely	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK %	N=	Average
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	18	5	2	1	9	3	3	7	5	30	15	307	6.3
I don't have the information I need to make an informed decision about energy efficient investments.	27	6	4	1	9	2	3	8	4	25	11	307	5.5
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	32	4	2	1	8	1	2	3	1	15	30	307	4.3
We are not able to finance the upgrades and pay for them over time.	20	3	2	1	9	2	3	5	4	32	18	307	6.3
Getting a utility rebate is too much hassle.	41	7	1	3	6	2	1	2	3	13	23	307	3.6
The space is rented and I need the owner's consent to make improvements.*	22	3	1	1	3	2	1	3	4	55	7	196	7.2
I'm not at this location for long.*	44	4	2	1	7	1	1	5	2	25	9	196	4.5
It's not worth investing because it's not my building.*	48	4	2	1	7	1	2	5	1	21	9	196	4.2

PE35A-H: How well do each of the following statements describe your beliefs about energy efficiency investments?

* Results are shown for renters only.

To assess the effectiveness of referrals, respondents were asked if they were aware of other energy efficiency programs. Then as a follow-up question, they were asked if anyone from the Partnership had referred them to other programs. As shown in Table 105, 89 percent were unaware of other energy efficiency programs, and only two percent said that they had been referred to other programs by the Partnership staff they talked with. As with the other Partnerships, the low level of awareness of other programs indicates that the methods being used to promote other programs are generally ineffective.

Table 105: LGP Referrals to Other Energy Efficiency Programs – STK Residential

Response (n = 307)	% Of Respondents
Not aware of other programs	89%
Yes, referred by Partnership	2%
No, not referred by Partnership	7%
Don't Know	2%

A30: Besides the Stockton program, are you aware of other programs that are designed to promote energy efficiency?

A32: Did anyone from the Stockton program recommend that you participate in any other energy conservation program?

Measure Installation Verification

As shown in Table 106, 94 percent of the 307 participants interviewed had their energy efficiency equipment installed for them, as opposed to having it dropped off for them to install later. This high rate of partner installed measures results in greater confidence that these measures are installed properly and are achieving savings.

Table 106: Equipment Installation Method – STK Residential

Response (n = 307)	% Of Respondents
Yes, program installed equipment	94%
No, equipment dropped off	3%
Refused/ Don't know	3%

VER10: Did someone from the program install all of the products, or were they given to you for you to install later?

Table 107 shows the share of respondents that had some of installed measures removed, either for equipment failure or other reasons. Respondents indicated that 13 percent had removed CFL bulbs and 11 percent had removed thermostats, while only 4 percent had removed CFL fixtures installed through the program.

Note that Table 107 shows the share of *respondents* with failed or removed measures. Subsequent tables show the results of additional verification questions that address the share of *measures* that are no longer in place. The results that are a function of the share of measures are the ones that are used later in this section to adjust the net impacts for this Partnership.

Table 107: Failure Rate of Installed Measures – STK Residential

Measure	Failed/Removed	No Problems	R/DK
	%	%	%
CFL Bulb (n = 272)	13%	86%	1%
CFL Fixture (n = 275)	4%	94%	1%
Thermostat (n = 19)	11%	89%	0%

RET20: Have any of those [M_DESC] installed failed or been removed?

Additional questions were asked to differentiate CFL bulbs that were removed because of failure and those that were removed for non-failure reasons (e.g., a remodeling required the removal, the equipment was upgraded, light too bright or dim). The vast majority of CFL bulbs that were removed were removed because they failed during or after installation. Only five respondents replaced CFL lamps for non-failure reasons, and all of them used incandescent bulbs for the replacement lighting. The reasons for replacement were that the bulbs burned out or were broken, or that the light was too dim.

Table 108 below shows the results for both the phone survey verification and the on-site visit verification. The first column in each section shows how many sites had each of the measures listed. In addition to CFLs, CFL Fixtures, Thermostats, and T5/T8s, there are some measures that fall into the category 'Other' that have not been shown in the table. Since many sites had more than one measure, the total for sites is the number of unique sites surveyed or visited.

The second column displays the quantity of measures as it was reported in the PG&E tracking database. The third column shows the quantity of each measure that could be verified either by the verifier on-site, or by the respondent over the phone. The percentage shown in the fourth column shows the percent verified of the sites visited or interviewed. If a percentage is greater than 100 percent, additional measures were found installed that were not included in the PG&E tracking data for this program. It is unclear if this is due to errors in coding of these measures in the system or if these measures were installed through other programs.

The 20 on-site visits for the residential part of the Stockton Partnership verified 85 percent of the reported quantities for CFLs, CFL Fixtures, and Thermostats. For CFLs, 89 percent were verified as installed while 82 percent of the CFL Fixtures were confirmed during the on-sites. Thermostats had a slightly lower verification rate at 75 percent.

Table 108: Phone and On-site Visit Verification – STK Residential

	On-site Visit				Phone Survey			
	Equipment Reported		Equipment Verified		Equipment Reported		Equipment Verified	
Measures	Sites	Quantity	Quantity	Percent	Sites	Quantity	Quantity	Percent
CFLs	19	44	39	89%	285	588	602	102%
CFL Fixtures	20	44	36	82%	291	746	646	87%
Thermostats	4	4	3	75%	29	29	20	69%
T5/T8s	0	0	0		0	0	0	
Total	20	92	78	85%	307	1,363	1,268	93%

The initial plan for the evaluation was to analyze data from the on-site and phone verification results and create an adjustment factor using data from both sources. The phone survey results, however, differed substantially from the on-site results across the various Partnerships. In some cases the phone verification rate was greater than the on-site rate while in other cases the phone verification rate was less than the on-site rate. These differences occurred across both Partnerships and measures. Due to this wide variability and the lack of a consistent trend, we did not use the phone survey data for the verification rates and relied only on the on-site data as we believe that the on-site data are more accurate for verification purposes.

Verification adjustment factors for use in the net impact analysis were developed using the following method. For those measures that were found at more than 10 sites, the measure-specific verification rate is used. For those measures that had a sample of 10 sites or less, the overall average on-site verification rate was applied for that Partnership. While 10 sites is still a relatively small sample, we believe that the benefits of using a measure-specific adjustment factor outweigh the uncertainty of the small sample. Finally, if the verification rate was greater than 100 percent, it was capped at 100 percent as it was not possible to determine if the additional measures were installed through the Partnership program, some other efficiency program, or purchased by the participant outside any efficiency program. Therefore, to be conservative the verification rate is capped at 100 percent. The resulting verification rate is used to adjust impacts at the measure level as part of the net realized impacts calculations discussed at the end of this section.

Participant Satisfaction with Program

The satisfaction scores for various program elements are shown in Table 109. The overall satisfaction level was high (9.0 out of 10) and all elements scored well (8.6 to 9.4 out of 10). On a relative basis, the interaction with program staff scored the highest (9.4) and had very low levels of dissatisfaction (only 4 percent gave anything less than a 5). Respondents were also generally satisfied with the information provided about the program (8.7). Despite participant concerns about realizing expected billing savings (see Table 104 – Respondent Beliefs), customer satisfaction with bill savings was quite high (8.6) with only 7 percent giving a score of less than 5. Compared to the other questions, however, there is a larger percentage of

respondents in the Refused/Don't Know category, which is probably an indication of the participants' not knowing whether or not they saved money.

Table 109: Satisfaction with Program Elements – STK Residential

Rating Scale: 1 = Extremely Dissatisfied, 10 = Extremely Satisfied	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK %	N=	Average
Overall satisfaction with the program experience	2	1	1	1	4	1	3	8	9	69	0	307	9.0
Information provided about the program	3	1	0	1	6	4	3	9	7	63	3	307	8.7
Interaction with program staff	2	1	1	0	3	2	3	8	8	69	3	307	9.4
Bill savings	5	1	1	0	3	3	4	7	6	51	19	307	8.6
Installation process	3	0	0	1	4	1	2	6	7	70	5	307	9.1

SAT2-30. On a scale of 1 to 10 where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Table 110 shows that 71 percent of all respondents are more likely to make future energy efficiency improvements after participating in the program. In separate survey questions, 76 percent of respondents that installed CFL lighting said they plan to continue using CFLs as their existing lights burn out or fail, and among this group, 75 percent indicated that the program was very influential in their decision to use CFLs in the future.

Table 110: Future Energy Efficient Installations – STK Residential

Response (n = 307)	% Of Respondents
More likely	71%
Same	21%
Less Likely	3%
Refused/Don't Know	5%

PE11: Are you more or less likely to install energy-efficiency products as a result of your experience with this program?

Self-Reported Free Ridership

Table 111 shows the responses to two separate questions regarding what would have been done in absence of the program. The first question asks respondents directly what they would have done in absence of the program. The second question was asked separately to determine which respondents were considering installing energy efficiency equipment prior to learning about the Partnership. In developing a free ridership estimate, we assigned full and partial free ridership rates as follows:

- Those that claim they would have purchased the same equipment at the same time, and were already considering installing the equipment are full free riders.

- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment before they learned about the program are partial free riders, at 50 percent.

- Those that claim they would have purchased the same equipment at a later time, and were already considering installing the equipment are partial free riders, at 50 percent.

- Those that claim they would have purchased the same equipment at a later time, but were not considering installing the equipment before they learned about the program are partial free riders, at 25 percent.

- Those that claim they would have not have purchased equipment, or would have purchased standard equipment are net participants (no free ridership).

For the residential measures in the Stockton Partnership, the self-reported free ridership rate is 13.9 percent. This is consistent with the free ridership rate currently assumed for the program. The net-to-gross ratio for the measures covered in this program is 0.89, which implies a free ridership of 11 percent or more.

Table 111: Self-Reported Free Ridership – STK Residential

What type of equipment would you have purchased had the rebate not existed?	Before you learned about the program, were you already considering purchasing the measure?	Measures	Quantity Weighted Percent	Contribution to Free Ridership
None	Yes	28	2.4%	0.0%
	No	454	38.3%	0.0%
Standard Equipment	Yes	103	8.7%	0.0%
	No	330	27.9%	0.0%
Same Energy Efficient Equipment, Later	Yes	80	6.8%	3.4%
	No	67	5.7%	1.4%
Same Energy Efficient Equipment, Now or Earlier	Yes	93	7.9%	7.9%
	No	29	2.4%	1.2%
Total		**1,184**	**100.0%**	**13.9%**

The free ridership rates are shown separate for CFLs and T8/T5s in Table 112 below. For CFLs, the self-reported free ridership rate is 18 percent, which is higher than the 11 percent currently used to calculate the *ex ante* impacts for the residential component of the Stockton Partnership. For CFL Fixtures, the self-reported free ridership rate is 11 percent, which is the same rate currently used by the Partnership for residential customers.

For the self-reported free ridership estimates, the results are sensitive to the weights applied to the partial free ridership responses. We have used a weight of 50 percent for partial free riders

and 25 percent for partial free riders that were not considering purchasing equipment prior to speaking with a technician about the Partnership. Any such weighting scheme is somewhat arbitrary and these weights were chosen as they are generally consistent with other evaluation studies (such as Express Efficiency) and seemed to be reasonable assumptions for this program.

To test how sensitive the results are to the partial free ridership weighting assumptions, we also calculated free ridership rates using a lower weight for partial free riders. This weighting scheme applies a 50 percent reduction to the weights already assigned (25 percent for partial free riders and 12.5 percent for those that were not considering purchasing equipment prior to being involved with the program). With these lower rates, the estimated free ridership for CFLs falls from 18 percent to 15 percent. For CFL Fixtures the rate falls from 111 percent to 8 percent.

A similar sensitivity test was done by increasing the weights 50 percent for partial free riders. To calculate a higher bound for the estimate, a weight of 75 percent was used for partial free riders and 37.5 percent for partial free riders that were not considering purchasing equipment prior to learning about the program. With this weighting increase, the estimated free ridership rate for CFLs increases from 18 percent to 21 percent. For CFLs, the free ridership rate increases from 11 percent to 13 percent.

The sensitivity analysis just discussed is summarized in Table 112. Although the weight ranges used for the sensitivity analysis are also arbitrarily chosen, they do provide useful information on how much the free ridership rates might vary under alternative assumptions. Note that these results do not account for any additional error that may be introduced by response bias previously discussed for these types of questions.

Table 112: Free Ridership Sensitivity Analysis – STK Residential

Free Ridership Weighting Scheme	All Measures	CFL	CFL Fixtures	Thermostats
Current Weighting (Partial FR weight=50%, 25%)	13.9%	18.0%	10.5%	16.7%
Low Weighting (Partial FR weight=25%, 12.5%)	10.9%	14.8%	7.6%	15.0%
High Weighting (Partial FR weight= 75%, 37.5%)	16.9%	21.2%	13.4%	18.3%

NET IMPACT RESULTS – STK RESIDENTIAL

The preceding information regarding self-reported free ridership, and installation verification is used to adjust the *ex ante* gross impacts to determine the *ex post* net realized impacts for the residential portion of the Stockton Partnership. The specific adjustments and the effect on net realized impacts for both energy and demand are discussed below.

2004-05 Cumulative kWh Impacts – STK Residential

The adjustment factors used to determine *ex post* net realized impacts from the *ex ante* gross impacts are shown in Table 113. Free ridership adjustments are derived from the survey data discussed in the previous section. We were able to develop separate free ridership adjustment factors for the CFLs, CFL Fixtures, and Thermostats. For the others we use the average self-

reported free ridership rate derived from the survey data from the Stockton residential participants. Finally, we adjust savings based on the verification rate developed from the on-site audit data. For all measures we use the average overall verification rate of 85 percent.

Table 113: *Ex Post* Net Realization Rates for kWh Impacts – STK Residential

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.82	0.89	0.73
CFL Fixtures	0.89	0.82	0.73
Thermostats	0.83	0.85	0.71
Other Measures	0.86	0.85	0.73

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 114. Note that this table shows the change in the *ex ante* and *ex post* net savings, while the previous table shows the change from *ex ante* gross impacts to *ex post* net impacts. For example, with the CFL measure group the *ex post* net impacts are 73 percent of *ex ante* gross impacts (as shown in Table 113), or a reduction of 27 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is slightly less at a 18 percent reduction (as shown in Table 114).

Table 114: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – STK Residential

Measure	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	498,635.2	443,785.3	363,904.0	-18.0%
CFL Fixtures	1,188,493.4	1,057,759.1	867,362.5	-18.0%
Thermostats	129,974.3	115,677.1	91,696.8	-20.7%
Total	1,817,102.9	1,617,221.6	1,322,963.3	-18.2%

2004-05 Cumulative kW Impacts – STK Residential

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 115. As with the kWh impacts, the kW impacts are adjusted to account for verification, free ridership, and the *ex post* net realization rate is the product of the adjustment factors shown in the table.

Table 115: *Ex Post* Net Realization Rates for kW Impacts – STK Residential

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.82	0.89	0.73
CFL Fixtures	0.89	0.82	0.73
Thermostats	0.83	0.85	0.71
All Other Measures	0.86	0.85	0.73

The same issues relating to uncertainty discussed with the kWh impacts also apply to the *ex post* kW impacts. For example, there is uncertainty regarding the survey responses used for the self-reported free ridership due to the weighting scheme and the potential for response bias with these types of questions.

Table 116 shows the final *ex post* kW impacts for the residential component using the adjustment factors from Table 115. The net therm impacts are also shown in Table 117.

Table 116: Change in *Ex Ante* and *Ex Post* Net kW Impacts – STK Residential

Measure	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	61.8	55.0	45.1	-18.0%
CFL Fixtures	103.3	91.9	75.4	-18.0%
Thermostats	201.5	179.3	142.1	-20.7%
Total	366.6	326.3	262.7	-19.5%

Table 117: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – STK Residential

Measure	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
Thermostats	35,437.5	31,539.4	25,001.2	-20.7%

The impact table required by the CPUC, showing kWh, kW, and therm savings over time (commercial and residential combined) and taking into account the expected useful life for each measure, is included in *Appendix A*.

SURVEY RESULTS – STK COMMERCIAL

For the commercial component of the Stockton Partnership, we surveyed 68 participants from the Small Business Energy Cents and Direct Install program components. Selected survey results are discussed below.

Firmographic Summary

As shown in Table 118, of the 68 commercial respondents, 59 percent rent or lease their business facility and 41 percent own their facility.

Table 118: Business Ownership – STK Commercial

Response (n = 68)	% Of Respondents
Rent/lease	59%
Own	41%

RENT5: Does your business own, lease or rent the facility?

Table 119 shows that 70 percent of the businesses surveyed have 10 or fewer employees, and 44 percent have 5 or fewer employees. Only one business employed more than fifty.

Table 119: Number of Employees – STK Commercial

Response (n = 68)	% Of Respondents
1 to 5	44%
6 to 10	26%
11 to 20	13%
21 to 50	7%
51 to 100	1%
Greater than 100	1%
Refused/Don't Know	5%

FIRM5: Which of the following categories describes the number of employees your firm has at this address?

Partnership Awareness and Participant Motivations

Commercial respondents were asked to indicate how they first became aware of the Partnership program, and the results are shown in Table 120. The largest group of respondents (47 percent) learned of the program from the technician that provided the equipment.

Table 120: Source of Program Awareness – STK Commercial

Response (n = 68)	% Of Respondents
From technician that installed/provide the equipment	47%
Other	38%
Other business, word of mouth, friend, or relative	6%
Found independently	3%
Don't know	6%

A25: How did you first become aware of the program?

The most commonly cited reasons for participating in the program are to save money on electric bills (66 percent) and to receive free equipment (31 percent). Table 121 shows in more detail a summary of the responses (respondents were allowed to select multiple reasons that applied to them).

Table 121: Reasons for Participation – STK Commercial

Response (n = 68)	% Of Respondents
Saving money on electric bills	66%
To receive free equipment	31%
Energy crisis	16%
Replacing old or broken equipment	15%
Helping protect the environment	13%
Other / none of the above	10%
Acquiring the latest technology	3%
Recommended by utility account representative	1%
Recommended by contractors	1%
Part of broader facility remodel/renovation	1%
To learn more about reducing energy costs	1%

A28: Why did your company participate in the program?

As shown in Table 122, most of the commercial participants considered both utility and local government sponsorship important. When asked about local government sponsorship, 85 percent indicated that it was at least "Somewhat important" for their participation decision, and 79 percent said that PG&E sponsorship was "Very important." The importance placed on local government sponsorship was somewhat lower than that observed in the other Partnerships.

Table 122: Importance Of Government Sponsorship - STK Commercial

Response (n = 68)	Local Government	PG&E
Very important	56%	79%
Somewhat important	29%	13%
Not at all important	13%	6%
Refused/Don't know	1%	1%

SPON1: In deciding to participate in the Stockton program, how important was it to you that Stockton sponsored the program? Would you say it was…

SPON3: How important was it to you that PG&E sponsored the program? Would you say it was. . .

Table 123 shows the attitudinal responses to a series of statements regarding potential barriers to installing energy efficient equipment. For these questions, ratings of 8 or greater were considered as "strongly agree" while ratings of 3 or less were "strongly disagree."

When asked if they were concerned bill savings will be less than what was estimated, 25 percent strongly agreed (rated 8 or above) while 21 percent strongly disagreed (rated 3 or below). Twenty-nine percent of the respondents felt that they did not have the information needed to make informed decisions about energy efficiency investments. There was less concern about the hassle involved in installing the equipment, with only 8 percent strongly agreeing that there is too much hassle compared to 41 percent who strongly disagree.

There were a variety of different responses regarding whether or not energy efficiency equipment costs too much. Thirty-two percent strongly disagreed that financing was an issue, 23 percent strongly agreed, and 21 percent were right in the middle. This suggests that costs remain a significant barrier for some customers. That supports the program theory that a direct install program is needed to get many customers to adopt energy efficient measures.

For the last three statements in Table 123, only the responses of business renters are shown. Among renters, 65 percent of the respondents strongly disagreed with the statement that they would be leaving the building in the near future. Fifty-one percent of renters also strongly disagreed with the statement that it isn't worthwhile to make energy efficient investments in someone else's building. This contradicts the commonly held belief that small commercial customers are resistant to making investments in energy efficient equipment when they do not own their building.

Table 123: Respondent Beliefs About Energy Efficient Products - STK Commercial

Rating Scale: 1 = Disagree Completely, 10 = Agree Completely	1%	2%	3%	4%	5%	6%	7%	8%	9%	10 %	R/DK %	N=	Average
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	13	4	4	7	22	6	13	12	0	13	4	68	5.5
I don't have the information I need to make an informed decision about energy efficient investments.	16	7	6	6	21	3	9	10	1	18	3	68	5.4
There is too much time and hassle involved in installing energy-efficient products.	25	6	10	1	21	7	10	4	0	4	10	68	4.1
Lack of financing is a barrier to our organization making energy efficiency investments that we want to make.	25	3	4	3	21	6	15	9	1	12	1	68	5.1
Getting a utility rebate is too much hassle.	25	9	3	1	16	6	10	4	3	13	9	68	4.8
The space is rented and I need the owner's consent to make improvements.*	17	3	3	3	17	0	13	5	3	38	4	40	6.5
I'm not at this location for long.*	57	5	3	0	10	0	5	0	0	8	13	40	2.7
It's not worth investing because it's not my building.*	35	8	8	3	20	3	5	5	0	13	3	40	4.1

PE35A-H: How well do each of the following statements describe your beliefs about energy efficiency investments?

* Results are shown for renters only.

Table 124 shows the degree to which commercial survey respondents recalled referrals to other energy conservation programs by the Stockton Partnership staff. Eighty-eight percent of the participants were not aware of other programs. Of those who were aware, none recalled being referred by the partnership's staff. As with the residential customers for this Partnership, respondents are generally not retaining any information received about other programs and participants remain generally unaware of other program opportunities.

Table 124: LGP Referrals To Other Energy Efficiency Programs - STK Commercial

Response (n = 68)	% Of Respondents
Not aware of other programs	88%
Yes, referred by Partnership	0%
No, not referred by Partnership	8%
Don't Know	4%

A30: Besides the program, are you aware of other programs that are designed to promote energy efficiency?

A32: Did anyone from the Stockton program recommend that you participate in any other energy conservation program?

Measure Installation Verification

Table 125 shows the type of product delivery for the commercial portion of the Stockton Partnership. Of the commercial customers surveyed, the vast majority (90 percent) said that the program installed the equipment. When partnership staff assumes responsibility for the installation, there is a higher likelihood that the measures will be installed properly.

Table 125: Equipment Installation Method - STK Commercial

Response (n = 68)	% Of Respondents
Yes, program installed equipment	90%
No, equipment dropped off	9%
Don't Know	1%

VER10: Did someone from the program install all of the products, or were they given to you for you to install later?

Table 126 shows the effectiveness of the installed measures and reveals that less than 15 percent of the measures failed or required replacement. The highest failure rate was for thermostats and T5 or T8 lamps.

Table 126: Failure Rate of Installed Measures – STK Commercial

Measure	Failed/Removed	No Problems	R/DK
	%	%	%
CFL Bulb (n = 48)	4%	92%	4%
T5/T8 (n = 58)	14%	86%	0%
Exit Sign (n = 13)	0%	100%	0%
CFL Fixture (n = 6)	0%	100%	0%
Motion Sensor (n = 29)	3%	90%	6%
Thermostat (n = 21)	14%	86%	0%
Other (n = 1)	0%	100%	0%

RET20: Have any of the installed measures failed or been removed?

Additional questions were asked to differentiate CFL bulbs that were removed because of failure and those that were removed for non-failure reasons (e.g., a remodeling required the removal, the equipment was upgraded, light too bright or dim). No CFL bulbs were removed for non-failure reasons.

Table 127 below shows the results for both the phone survey verification and the on-site visit verification. The first column in each section shows how many sites had each of the measures listed. In addition to CFLs, CFL Fixtures, Thermostats, and T5/T8s, there are some measures that fall into the category 'Other' that have not been shown in the table. Since many sites had more than one measure, the total for sites is the number of unique sites surveyed or visited.

The second column displays the quantity of measures as it was reported in the PG&E tracking database. The third column shows the quantity of each measure that could be verified by the respondent over the phone. The percentage shown in the fourth column shows the percent verified of the sites visited or interviewed. If a percentage is greater than 100 percent, additional measures were found installed that were not included in the PG&E tracking data for this program. It is unclear if this is due to errors in coding of these measures in the system or if these measures were installed through other programs.

From the 68 respondents we were able to confirm 100 percent of the measures installed over all for the commercial component of the Stockton Partnership. CFLs had a slightly lower verification rate at 91 percent while CFL Fixtures (the smallest share of measures) had a verification rate of 84 percent. There were no on-site verifications completed for this component.

Table 127: Phone Verification – STK Commercial

	Equipment Reported		Equipment Verified	
Measures	**Sites**	**Quantity**	**Quantity**	**Percent**
CFLs	51	766	696	91%
CFL Fixtures	7	19	16	84%
Thermostats	21	35	35	100%
T5/T8s	59	2,912	2,997	103%
Total	68	3,732	3,744	100%

Participant Satisfaction

Table 128 shows the commercial customer satisfaction with various aspects of the Stockton Partnership. For the most part, participants were satisfied with their overall program experience, with an average satisfaction rating of 8.8 (on a 10-point scale). Eighty-six percent reported a satisfaction rating of 8 or higher. The highest satisfaction level was recorded for the information provided by the program (an average of 9.3).

The installation process received an average score of 8.3. The high satisfaction of the installation process likely reflects the high percentage of installations done by the partnership as opposed to dropping of equipment for the participants to install.

Satisfaction with bill savings was similar to other categories with its average score of 8.3. It should be noted that over half (53 percent) gave bill savings a satisfaction rating of 8 or higher.

Table 128: Respondent Satisfaction With Program - STK Commercial

Rating: 1 = Extremely Dissatisfied, 10 = Extremely Satisfied	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK/NA %	n =	Average
Overall satisfaction with the program experience	0	0	0	1	4	3	6	24	18	44	0	68	8.8
Information provided about the program	1	0	0	1	1	3	15	26	7	38	4	68	9.3
Interaction with program staff	3	0	0	1	4	6	10	26	12	34	3	68	8.2
Bill savings	1	0	0	0	6	4	6	15	10	28	29	68	8.3
Audit Process	0	1	0	0	4	9	7	19	10	34	15	68	8.4
Installation process	1	0	3	0	7	7	4	21	15	40	1	68	8.3

SAT2-30. On a scale of 1 to 10 where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Table 129 shows that 81 percent of all respondents are more likely to make future energy efficiency improvements after participating in the program. In separate survey questions, 86 percent of respondents that installed CFL lighting plan to continue using CFLs as their existing lights burn out or fail, and among this group, 92 percent indicated that the program was at least somewhat influential in their decision to use CFLs in the future.

Table 129: Future Energy Efficient Installations – STK Commercial

Response (n = 68)	% Of Respondents
More likely	81%
Less likely	1%
Same	12%
Refused/Don't Know	5%

PE11: Are you more or less likely to install energy-efficiency products as a result of your experience with this program?

Self-Reported Free Ridership

Table 130 shows the responses to two separate questions regarding what would have been done in absence of the program. The first question asks respondents directly what they would have done in absence of the program. The second question was asked separately to determine which respondents were considering installing energy efficiency equipment prior to learning about the Partnership. In developing a free ridership estimate, we assigned full and partial free ridership rates as follows:

- Those that claim they would have purchased the same equipment at the same time, and were already considering installing the equipment are full free riders.
- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment before they learned about the program are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, and were already considering installing the equipment are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, but were not considering installing the equipment before they learned about the program are partial free riders, at 25 percent.
- Those that claim they would have not have purchased equipment, or would have purchased standard equipment are net participants (no free ridership).

For the residential measures in the Stockton Partnership, the self-reported free ridership rate is 12.6 percent.

Table 130: Self-Reported Free Ridership – STK Commercial

What type of equipment would you have purchased had the rebate not existed?	Before you learned about the program, were you already considering purchasing the measure?	Measures	Quantity Weighted Percent	Contribution to Free Ridership
None	Yes	28	0.6%	0.0%
	No	1915	42.4%	0.0%
Standard Equipment	Yes	175	3.9%	0.0%
	No	756	16.8%	0.0%
Same Energy Efficient Equipment, Later	Yes	608	13.5%	6.7%
	No	433	9.6%	2.4%
Same Energy Efficient Equipment, Now or Earlier	Yes	542	12.0%	12.0%
	No	55	1.2%	0.6%
Total		**4,512**	**100.0%**	**21.8%**

The free ridership rates are shown separate for CFLs and T8/T5s in Table 131 below. For CFLs, the self-reported free ridership rate is 21 percent, which is higher than the 4 percent currently used to calculate the *ex ante* impacts for the Stockton Partnership. Similarly, for T8/T5s the self-reported free ridership rate is 8 percent, which is also higher than the 4 percent rate currently used by the Partnership for these measures.

For the self-reported free ridership estimates, the results are sensitive to the weights applied to the partial free ridership responses. We have used a weight of 50 percent for partial free riders and 25 percent for partial free riders that were not considering purchasing equipment prior to speaking with a technician about the Partnership. Any such weighting scheme is somewhat arbitrary and these weights were chosen as they are generally consistent with other evaluation studies (such as Express Efficiency) and seemed to be reasonable assumptions for this program.

To test how sensitive the results are to the partial free ridership weighting assumptions, we also calculated free ridership rates using a lower weight for partial free riders. This weighting scheme applies a 50 percent reduction to the weights already assigned (25 percent for partial free riders and 12.5 percent for those that were not considering purchasing equipment prior to becoming aware of the program). With these lower rates, the estimated free ridership for CFLs falls from 21 percent to 11 percent while for T8/T5s the rate falls from 8 percent to 4 percent.

A similar sensitivity test was done by increasing the weights 50 percent for partial free riders. To calculate a higher bound for the estimate, a weight of 75 percent was used for partial free riders and 37.5 percent for partial free riders that were not considering purchasing equipment prior to learning about the program. With this weighting increase, the estimated free ridership rate for CFLs increases from 21 percent to 30.7 percent. For T8/T5s, the free ridership rate increases from 8 percent to 12 percent.

The sensitivity analysis just discussed is summarized in Table 131. Although the weight ranges used for the sensitivity analysis are also arbitrarily chosen, they do provide useful information on how much the free ridership rates might vary under alternative assumptions. Note that these results do not account for any additional error that may be introduced by response bias previously discussed for these types of questions.

Table 131: Free Ridership Sensitivity Analysis – STK Commercial

Free Ridership Weighting Scheme	All Measures	CFL	T5/T8	Other Measures
Current Weighting (Partial FR weight=50%, 25%)	21.8%	20.8%	7.9%	23.7%
Low Weighting (Partial FR weight=25%, 12.5%)	16.9%	10.8%	4.3%	12.6%
High Weighting (Partial FR weight= 75%, 37.5%)	26.6%	30.7%	11.5%	34.7%

NET IMPACT ANALYSIS – STK COMMERCIAL

The preceding information regarding self-reported free ridership, operating hours, and installation verification is used to adjust the *ex ante* gross impacts to determine the *ex post* net realized impacts for the commercial components of the Stockton Partnership. The specific adjustments and the effect on net realized impacts for both energy and demand are discussed below.

2004-05 Cumulative kWh Impacts – STK Commercial

As discussed in the *General Evaluation Findings* section of this report, the operating hour assumption for the commercial lighting measures is likely higher than the operating hours actually realized for small businesses targeted by this Partnership. (See the more detailed discussion of this issue in *Chapter 3* of this report.) To correct for the operating hours assumption, we apply an adjustment to the savings for CFLs, T8/T5s, and CFL Fixtures.

The adjustment factors used to determine *ex post* net realized impacts from the *ex ante* gross impacts are shown in Table 132. Free ridership adjustments are derived from the survey data discussed in the previous section. We were able to develop separate free ridership adjustments for the CFL and T8/T5 measures. For the others we use the average self-reported free ridership rate derived from the survey data from the Stockton commercial participants.

Finally, we adjust savings based on the verification rate developed from the phone survey data, as there were no on-site verifications done for this partnership component. Based on the phone survey data, we use the overall verification rate of 1.00 to adjust for persistence for all measures.

Table 132: *Ex Post* Net Realization Rates for kWh Impacts – STK Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Operating Hours Adjustment	Verification	*Ex Post* Net Realization Rate
CFLs	0.79	0.44	1.00	0.35
T5/T8	0.92	0.58	1.00	0.53
Other Measures	0.76	1.00	1.00	0.76

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 133. The largest reductions from the original *ex ante* gross impacts are in the T8/T5 and CFL categories and also comprise the majority of the savings. These savings from the original planning estimates are largely due to the reduced operating hour adjustment based on the on-site verification results.

Note that Table 133 shows the change in the *ex ante* and *ex post* net savings, while Table 132 shows the change from *ex ante* gross impacts to *ex post* net impacts. For example, with the T8/T5 measure group the *ex post* net impacts are 53 percent of *ex ante* gross impacts (as shown in Table 132), or a reduction of 47 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is slightly less at a 45 percent reduction (as shown in Table 133).

Table 133: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – STK Commercial

Measure	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	2,287,441.3	2,195,943.7	795,114.6	-63.8%
T5/T8	477,597.9	458,494.0	240,995.9	-47.4%
Thermostats	270,138.0	259,332.5	232,318.7	-10.4%
Exit Signs	228,384.0	219,248.6	196,410.2	-10.4%
Reflective Window Film	25,310.3	24,297.9	21,766.8	-10.4%
Reflectors/ Delamping	12,074.4	11,591.4	6,092.7	-47.4%
Sensors	209,094.5	200,730.8	179,821.3	-10.4%
Total	3,510,040.5	3,369,638.8	1,672,520.3	-50.4%

2004-05 Cumulative kW Impacts – STK Commercial

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 134. As with the kWh impacts, the kW impacts are adjusted to account for verification, free ridership, and the *ex post* net realization rate is the product of the adjustment factors shown in the table.

Table 134: *Ex Post* Net Realization Rates for kW Impacts – STK Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.79	1.00	0.79
T5/T8	0.92	1.00	0.92
All Other Measures	0.76	1.00	0.76

The same issues relating to uncertainty discussed with the kWh impacts also apply to the *ex post* kW impacts. For example, there is uncertainty regarding the survey responses used for the self-reported free ridership due to the weighting scheme and the potential for response bias with these types of questions.

Table 135 shows the final *ex post* kW impacts for the commercial component using the adjustment factors from Table 134. Therm impacts are also shown in Table 136

Table 135: Change in *Ex Ante* and *Ex Post* Net kW Impacts – STK Commercial

Measure	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	327.3	314.2	258.5	-17.7%
T5/T8	82.6	79.3	71.9	-9.4%
Exit Signs	27.5	26.4	23.7	-10.4%
Reflective Window Film	3.3	3.2	2.9	-10.4%
Reflectors/ Delamping	2.6	2.5	2.3	-9.4%
Sensors	97.0	93.1	83.4	-10.4%
Total	540.4	518.8	442.7	-14.7%

Table 136: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – STK Commercial

Measure	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
Thermostats	72,270.0	69,379.2	62,152.2	-10.4%

The impact table required by the CPUC, showing kWh, kW, and therm savings over time (commercial and residential combined) and taking into account the expected useful life for each measure, is included in *Appendix A*.

The following tables show the net kWh, kW, and therm impacts by program component for both the residential and commercial portions of the Stockton Partnership.

Table 137: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – STK Programs

Program	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
STK – Multi-Family (Direct Install)	1,473,889.5	1,311,761.6	1,073,123.9	-18.2%
STK – Single-Family (Direct Install)	343,213.4	305,459.9	249,839.4	-18.2%
STK – Small Biz (Direct Install)	1,077,157.7	1,034,071.4	602,056.7	-41.8%
STK – Small Biz – Energy Cents	2,432,882.7	2,335,567.4	1,070,463.6	-54.2%
Total	5,327,143.3	4,986,860.4	2,995,483.6	-39.9%

Table 138: Change in *Ex Ante* and *Ex Post* Net kW Impacts – STK Programs

Program	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
STK – Multi-Family (Direct Install)	286.6	255.1	205.3	-19.5%
STK – Single-Family (Direct Install)	80.0	71.2	57.4	-19.4%
STK – Small Biz (Direct Install)	160.7	154.3	134.5	-12.8%
STK – Small Biz – Energy Cents	379.7	364.5	308.2	-15.5%
Total	907.0	845.0	705.3	-16.5%

Table 139: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – STK Programs

Program	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
STK – Multi-Family (Direct Install)	28,282.5	25,171.4	19,953.3	-20.7%
STK – Single-Family (Direct Install)	7,155.0	6,368.0	5,047.9	-20.7%
STK – Small Biz (Direct Install)	65,700.0	63,072.0	56,502.0	-10.4%
STK – Small Biz – Energy Cents	6,570.0	6,307.2	5,650.2	-10.4%
Total	107,707.5	100,918.6	87,153.4	-13.6%

CONCLUSIONS AND RECOMMENDATIONS

From the analysis presented above, the following conclusions are drawn for the Stockton Partnership:

- **Reporting requirements must include contact information.** As discussed below, Partnerships are not required to submit participant contact information. This has made phone surveys and on-site verification difficult as we can only contact a portion of the customers for each Partnership.

- **Participant satisfaction is high.** For all the Partnerships, customers we surveyed were generally pleased with their program experience and gave high satisfaction ratings to the program overall and to individual program elements discussed during the phone survey.

- **The Partnership has been generally successful in reaching its target customer groups.** As shown in the survey results, the Partnership has been successful in reaching a significant amount of renters, low-income households, small businesses and non-English customer groups. These findings help support the program theory that the current program design is an effective way to recruit these traditionally hard-to-reach customer groups.

- **Both PG&E and local government sponsorship are considered important.** Participants overwhelmingly agreed that PG&E and local government sponsorship was important. For residential participants, 87 percent rated PG&E sponsorship as "Very Important," while 81 percent gave the same rating to local government sponsorship. Similarly, 79 percent of the commercial participants gave a "Very Important" rating to PG&E sponsorship and 56 percent gave the same rating to local government involvement.

- **Renters may have more influence over building energy decisions than originally assumed.** While many of the participants rent their homes or businesses, they still have a high level of control over the equipment decisions at their building. A majority of renters (54 percent residential, 51 percent commercial) strongly disagreed with the statement that it was not worth investing in energy efficiency because they did not own the building.

- **Participants still have very low awareness of other energy efficiency programs.** The vast majority of participants are unaware of other energy efficiency programs. Of those that are aware, very few recalled having programs recommended to them by the Partnership staff they interacted with. This indicates that Partnership efforts to funnel participants to other programs have had little or no effect.

- **Self-reported free ridership rates are slightly higher than rates currently used**. The survey questions used to estimate free ridership typically resulted in values that were higher than what is currently assumed for these programs.

Based on these conclusions, we offer the following recommendations for the Stockton Partnership:

- **Continue with the current program implementation method.** The process evaluation showed that the key elements of the program theory were supported through the existing program delivery method. Customer satisfaction is also high for all program elements. As long as this can be maintained and net savings are achieved, we see no reason why the current program design should be modified except as indicated in the other evaluation recommendations presented in this report.

- **Commercial operating hour assumptions need to be revised for T8/T5s and CFLs.** The current assumptions for annual operating hours are much higher than those found in comparable studies using on-site audit data and logger data for similar small business customers. Correcting for the operating hours substantially lowers the net *ex post* kWh and kW impacts for these measures in the commercial sector.

- **A separate study should be conducted to revise the operating hour assumptions used in the DEER database for small businesses.** A review of the DEER database revealed that in general the operating hours assigned for small businesses for T8/T5s and CFLs are higher than what has been observed for small business customers in this and other evaluation studies. However, the DEER database also delineates operating hours by business type and there is significant variation in operating hours across business categories. There was not a large enough sample of on-sites in this evaluation to produce separate operating hour estimates for each of the business types currently supported in the DEER database. We recommend a separate study be conducted to address this issue, as it appears that the current operating hour assumptions are generally too high for small business customers for T8/T5s and CFLs.

- **Require that full contact information be required for program tracking.** Currently, PG&E does not require that full contact information be reported for its Partnership, which hampered the evaluation effort and led to a more costly survey effort than originally

planned. We strongly recommend that complete contact information (contact name, address, phone number) become a reporting requirement for each Partnership.

- **Improve program referral methods.** If referral to other efficiency programs is to remain a criterion for this Partnership, then the referral methods need to be improved. Possibilities for increasing program awareness include leaving program informational materials with customers, providing a checklist of other measures that could be replaced and matched with a list of related efficiency programs, and follow-up phone calls from other programs to recruit these customers for additional measure installations.

7. EAST BAY ENERGY PARTNERSHIP

PROGRAM BACKGROUND

The following program description is based on our review of the Program Implementation Plan, staff interviews, and reviews of the monthly reports.

The East Bay Energy Partnership was designed to provide gas and electric savings to all market sectors – existing commercial and industrial buildings, new construction, existing small businesses, multi-family housing and lower income single-family dwellings. These sectors were targeted through a series of program components managed by PG&E and Quantum Consulting. Marketing tools that were used to promote the programs included: program brochures, direct telephone solicitations, inserts in city business license mailings, attendance at city business-oriented symposiums, PG&E energy efficiency workshops for existing customers, and holiday lighting events and exchanges (e.g., donation of LED lights). The specific program components are summarized below.

Single Family Direct Install

The single-family direct install element of the East Bay Partnership proactively reached out to moderate-income residents (via neighborhood canvassing) to provide and install packages of cost-effective energy-savings measures. This program was managed and implemented by LIEE subcontractors.

Senior Housing Program

Through a combination of energy efficiency audits, equipment incentives and installation, this program delivered both gas and electric savings to assisted living and convalescent facilities occupied primarily by senior citizens. This program was managed and implemented by Energy Solutions.

Building Tune-Up (BTU) Program

This program provided energy savings to large and medium sized non-residential customers through retro-commissioning and related-tuning of building systems. Audits and installations were completed at city and county municipal facilities, three hotels in a national chain, a large hospital, and several large retail chain stores. The BTU Program coordinated with PG&E-sponsored Standard Performance Contract Program (SPC), the Express Efficiency Program (EE), the Building Operator Certification Program (BOCT), and the CEC's Enhanced Building Automation Program (EBA). Marketing for this program was primarily via direct phone contact. This program was managed and implemented by Quantum Consulting.

Business Energy Services Team (BEST)

This turnkey small commercial program provided everything from customer audits to measure installation for customers. The program focused on non-residential customers with demand between 20 kW to 100 kW, primarily in the cities of Dublin and Pleasanton, and focused on

hard-to-reach tenants and leaseholders. Incentives for the BEST program were allocated on a per KWh basis. This program was managed and implemented by KEMA-XENERGY.

Smart Lights Very Small Commercial Program

This program was similar to the BEST program, but focused on lighting and refrigeration audits and installations for the hard-to-reach, very small commercial sector with usage under 20 kW. The program targeted areas of Alameda and Contra Costa counties that were not targeted by the BEST program (e.g., the cities of Concord and Martinez) to prevent program overlap and reduce customer confusion. The program conducted two training sessions on energy efficient lighting for very small businesses, and was managed and implemented by CESC.

Energy Efficiency Design Assistance (EEDA) Program

This program helped city and county buildings staff, architects, developers and building owners make commercial new construction and major remodel projects as energy efficient as possible through technical consultations and inspections. The program identified and quantified energy savings opportunities, which were then communicated to the Savings by Design Program (for commercial new construction), which could offer financial incentives to implement these opportunities. Staff from different cities assisted the program by providing lists of major planned construction projects. The program had more difficulty finding retrofit customers that were not already covered by other utility audit programs. This program was managed and implemented by Energy Solutions.

SURVEY RESULTS – EAST BAY (EBAY) RESIDENTIAL

For the residential component of the East Bay Partnership, we surveyed 205 participants from the Single Family Direct Install and Multi-Family Direct Install program components. Selected results are presented below.

Demographic Summary

As shown in Table 140, of the 205 residential survey respondents, 87 percent own their homes and 12 percent rent. The low level of renters is not surprising given that the Partnership is targeting Single Family homes.

Table 140: Home Ownership – EBAY Residential

Response (n = 205)	% Of Respondents
Own	87%
Rent	12%
Refused/Don't know	0%

DE1: Do you own or rent your home?

Table 141 shows that roughly half of the respondents (48 percent) earn $20,000 or less per year, and about 75 percent earn $50,000 or less per year. The high rate of low-income families shows

that the program has been successful in reaching the moderate- income and low- income residential population.

Table 141: Household Income – EBAY Residential

Response (n = 205)	% Of Respondents
$20,000 or less	48%
$20,000 to $50,000	26%
$50,000 to $75,000	4%
$75,000 to $100,000	2%
More than $100,000	0%
Refused/Don't Know	20%

DE8: Which of the following best represents your annual household income in 2004, before taxes?

Ninety-three percent of the respondents primarily speak English in their homes, while 6 percent primarily speak Spanish (Table 142).

Table 142: Language Spoken in Home – EBAY Residential

Response (n = 205)	% Of Respondents
English	93%
Spanish	6%
Other*	1%

DE10: What is the primary language spoken in your home?

* Includes Mandarin, Cantonese, Tagalog, Korean, Vietnamese, Russian, Japanese, Other, and Refused/Don't Know

Partnership Awareness and Participant Motivations

Respondents were asked how they first became aware of the Partnership program, and the results are shown in Table 143. The largest group of respondents (31 percent) learned of the program from personal contacts. The next most likely source of program information was the technician that provided the equipment.

Table 143: Source of Program Awareness – EBAY Residential

Response (n = 205)	% Of Respondents
Other business, word of mouth, friend, or relative	31%
From technician that installed/provided the equipment	23%
Other	16%
Mail	10%
Don't know	10%
Local news, radio, or newspaper	4%
School, church, or community organization	3%
Local government	1%
Found independently	1%
Internet	0%

A25: How did you first become aware of the program?

The most commonly cited reasons for participating in the program were to save money on electric bills (70 percent) and to receive free equipment (38 percent). Table 144 shows in more detail a summary of the responses (respondents were allowed to provide multiple responses).

Table 144: Reasons for Participation – EBAY Residential

Response (n = 205)	% Of Respondents
Saving money on electric bills	70%
To receive free equipment	38%
Other	15%
Replacing old or broken equipment	12%
Recommended by neighboring business or friend	12%
Energy crisis	8%
Helping protect the environment	4%
Recommended by contractor	4%
Recommended by utility account representative	4%
Acquiring the latest technology	4%

A28: Why did your household participate in the program?

Sponsorship of the program by PG&E and their local government was also important in the respondents' decision to participate in the program. Shown in Table 145, about 95 percent of respondents thought it was at least somewhat important that either of these organizations sponsored the program. Eighty percent considered it very important that the local government was sponsoring the program and 86 percent said the same for PG&E.

Table 145: Importance of Government Sponsorship – EBAY Residential

Response (n = 205)	Local Government	PG&E
Very important	80%	86%
Somewhat important	14%	10%
Not at all important	4%	3%
Refused/Don't know	1%	0%

SPON1: In deciding to participate in the [PARTNERSHIP_NAME] program, how important was it to you that [LOCAL_GOVERNMENT] sponsored the program? Would you say it was…

SPON3: How important was it to you that PG&E sponsored the program? Would you say it was. . .

Table 146 presents responses to a series of attitudinal questions about energy efficient products. More specifically, respondents were asked if they agreed or disagreed with a series of statements regarding the value of energy efficient products, and the ease or difficulty of procuring them (10 = "Agree Completely," 1 = "Disagree Completely"). Respondents that provided a rating of 8 or higher were considered as "strongly agree" while a rating of 3 or less was interpreted as "strongly disagree."

Respondents generally agreed with the statement "actual bill savings will be less than estimated," with 34 percent strongly agreeing (rating 8 or higher) and 28 percent providing a rating of 10. In contrast, 27 percent of respondents strongly disagreed with the statement on bill savings and gave it a rating of 3 or lower.

Regarding high equipment costs, this question received the highest level of agreement with an average score of 6.4. Forty-six percent of respondents strongly agreed with the statement "we were not able to finance the upgrades and pay for them over time," while only 24 percent strongly disagreed with this statement by giving it a rating of 3 or lower. This suggests that initial installation costs may remain a significant hurdle for many residential customers, and supports the program theory assumption that a direct install program is needed to get these customers to adopt energy efficient measures.

The respondents were generally split on whether they had enough information to make informed energy decisions, and gave an average score of 5.1. People were less likely to agree with the statement "there is too much time and hassle involved in selecting a qualified energy efficiency contractor," and gave an average score of 4.2. Respondents disagreed even more strongly that "getting a utility rebate is too much hassle," by giving an average score of 3.1.

The last three statements are different than the other attitudinal questions because they are partially related to household demographics (i.e., home ownership) in addition to perceptions about efficient energy. For these statements, only the responses of home renters are shown. Regarding the statement " the space is rented and I need the owner's consent to make improvements," 48 percent of the renters surveyed strongly agreed (rating 8 or higher) while 32 percent strongly disagreed (rating 3 or lower). In comparison, renters tended to disagree with the statement "I'm not at this location for long," with 60 percent of renters indicating they strongly disagreed. Twenty-four percent of renters said they strongly agreed with this statement. On the other hand, renters tended to agree with the statement "It's not worth investing because it's not

my building," with 40 percent saying they strongly agreed and 32 percent saying they strongly disagreed with this statement.

Table 146: Respondent Beliefs About Energy Efficient Products – EBAY Residential

Rating Scale: 1 = Disagree Completely, 10 = Agree Completely	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK %	N=	Average
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	20	5	2	2	14	3	3	5	1	28	16	205	5.8
I don't have the information I need to make an informed decision about energy efficient investments.	28	6	3	3	12	3	4	3	3	22	11	205	5.1
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	36	6	4	0	10	1	4	6	0	16	17	205	4.2
We are not able to finance the upgrades and pay for them over time.	18	5	1	1	9	3	3	6	2	38	11	205	6.5
Getting a utility rebate is too much hassle.	49	5	2	2	7	4	2	0	1	10	18	205	3.1
The space is rented and I need the owner's consent to make improvements.*	32	0	0	0	8	4	0	4	4	40	8	25	6.1
I'm not at this location for long.*	56	4	0	0	0	0	0	4	0	20	16	25	3.5
It's not worth investing because it's not my building.*	28	0	4	0	8	4	4	4	0	36	12	25	6.0

PE35A-H: How well do each of the following statements describe your beliefs about energy efficiency investments?

* Results are shown for renters only.

To assess the effectiveness of referrals, respondents were asked if they were aware of other energy efficiency programs. Then as a follow-up question, they were asked if anyone from the Partnership had referred them to other programs. As shown in Table 147, 87 percent were unaware of other energy efficiency programs. Only 2 percent said that they had been referred to other programs by the Partnership staff they talked with. As with the other Partnerships, the low level of awareness of other programs indicates that the methods being used to promote other programs are generally ineffective.

Table 147: LGP Referrals to Other Energy Efficiency Programs – EBAY Residential

Response (n = 205)	% Of Respondents
Not aware of other programs	87%
Yes, referred by Partnership	2%
No, not referred by Partnership	7%
Don't Know	1%

A30: Besides the [PARTNERSHIP_NAME] program, are you aware of other programs that are designed to promote energy efficiency?

A32: Did anyone from the [PARTNERSHIP_NAME] program recommend that you participate in any other energy conservation program?

Measure Installation Verification

As shown in Table 148, 82 percent of the 205 participants interviewed had their energy efficiency equipment installed upon delivery, as opposed to having it dropped off for them to install later. This high rate of partner installed measures results in greater confidence that these measures are installed properly and are achieving savings.

Table 148: Equipment Installation Method – EBAY Residential

Response (n = 205)	% Of Respondents
Yes, program installed equipment	82%
No, equipment dropped off	17%
Refused/ Don't know	1%

VER10: Did someone from the program install all of the products, or were they given to you for you to install later?

Table 149 shows the share of respondents that had some of installed measures removed, either for equipment failure or other reasons. Respondents indicated that 11 percent had removed CFL bulbs, while only 6 percent had removed CFL fixtures installed through the program.

Note that Table 149 shows the share of *respondents* with failed or removed measures. Subsequent tables show the results of additional verification questions that address the share of *measures* that are no longer in place. The results that are a function of the share of measures are the ones that are used later in this section to adjust the net impacts for this Partnership.

Table 149: Failure Rate of Installed Measures – EBAY Residential

Measure	Failed/Removed	No Problems	R/DK
	%	%	%
CFL Bulb (n = 182)	11%	87%	2%
CFL Fixture (n = 179)	6%	93%	1%
Thermostat (n = 14)	0%	100%	0%

RET20: Have any of those [M_DESC] installed failed or been removed?

Additional questions were asked to differentiate CFL bulbs that were removed because of failure and those that were removed for non-failure reasons (e.g., a remodeling required the removal, the equipment was upgraded, light too bright or dim). The vast majority of CFL bulbs that were removed were removed because they failed during or after installation. Only two respondents replaced CFL lamps for non-failure reasons. Of these, one used incandescent bulbs for the replacement lighting, while the other used CFLs.

A series of questions were asked during the phone surveys to verify the installation of measures. Respondents were asked to confirm the type and number of measures installed based on the information contained in PG&E's tracking system about the installation. Additional on-site data were collected for a subset of these respondents.

Table 150 below shows the results for both the phone survey verification and the on-site visit verification. The first column in each section shows how many sites had each of the measures listed. In addition to CFLs, CFL Fixtures, Thermostats, and T5/T8s, there are some measures that fall into the category 'Other' that have not been shown in the table. Since many sites had more than one measure, the total for sites is the number of unique sites surveyed or visited.

The second column displays the quantity of measures as it was reported in the PG&E tracking database. The third column shows the quantity of each measure that could be verified either by the verifier on-site, or by the respondent over the phone. The percentage shown in the fourth column shows the percent verified of the sites visited or interviewed. If a percentage is greater than 100 percent, additional measures were found installed that were not included in the PG&E tracking data for this program. It is unclear if this is due to errors in coding of these measures in the system or if these measures were installed through other programs.

The 67 on-site visits for the residential part of the East Bay Partnership verified over 100 percent of the combined CFLs, CFL Fixtures, and Thermostats reported as installed. The sites visited had substantially more CFLs than were reported (162 percent of the reported quantity were verified). All sites visited were reported to have CFL Fixtures and 82 percent of these were confirmed. Just 8 sites had thermostats and 5 of those were verified on-site.

Table 150: Phone and On-site Visit Verification – EBAY Residential

	On-site Visit				Phone Survey			
	Equipment Reported		Equipment Verified		Equipment Reported		Equipment Verified	
Measures	Sites	Quantity	Quantity	Percent	Sites	Quantity	Quantity	Percent
CFLs	61	124	201	162%	190	1,536	1,175	76%
CFL Fixtures	67	185	151	82%	201	557	1,125	202%
Thermostats	8	8	5	63%	20	20	23	115%
T5/T8s	0	0	0		0	0	0	
Total	67	317	357	113%	205	2,113	2,323	110%

The initial plan for the evaluation was to analyze the on-site and phone verification results and create an adjustment factor using data from both sources. The phone survey results, however, differed substantially from the on-site results across the various Partnerships. In some cases the phone verification rate was greater than the on-site rate while in other cases the phone verification rate was less than the on-site rate. These differences occurred across both Partnerships and measures. Due to this wide variability and the lack of a consistent trend, we did not use the phone survey data for the verification rates and relied only on the on-site data as we believe that the on-site data are more accurate for verification purposes.

Verification adjustment factors for use in the net impact analysis were developed using the following method. For those measures that were found at more than 10 sites, the measure-specific verification rate is used. For those measures that had a sample of 10 sites or less, the overall average on-site verification rate was applied for that Partnership. While 10 sites is still a relatively small sample, we believe that the benefits of using a measure-specific adjustment factor outweigh the uncertainty of the small sample. Finally, if the verification rate was greater than 100 percent, it was capped at 100 percent as it was not possible to determine if the additional measures were installed through the Partnership program, some other efficiency program, or purchased by the participant outside any efficiency program. Therefore, to be conservative the verification rate is capped at 100 percent. The resulting verification rate is used to adjust impacts at the measure level as part of the net realized impacts calculations discussed at the end of this section.

Participant Satisfaction with Program

Shown in Table 151 are the satisfaction scores for various program elements. The overall satisfaction level was high (8.8 out of 10) and all elements scored well (8.1 to 9.0 out of 10). On a relative basis, the installation process scored the highest (9.0) and had very low levels of dissatisfaction (only 3 percent gave anything less than a 5). Interaction with program staff received the same high score of 9.0, and also had few discontented respondents (3 percent rating less than 5). Respondents were also generally satisfied with the information provided about the program (8.8). Despite participant concerns about realizing expected billing savings (see Table 146 – Respondent Beliefs), customer satisfaction with bill savings was quite high (8.1) with only

7 percent giving a score of less than 5. Compared to the other questions, however, there was a larger percentage of respondents in the Refused/Don't Know category, which suggests uncertainty as to whether the installed measures were actually lowering their energy bills.

Table 151: Satisfaction with Program Elements – EBAY Residential

Rating Scale: 1 = Extremely Dissatisfied, 10 = Extremely Satisfied	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK %	N=	Average
Overall satisfaction with the program experience	3	0	0	0	3	4	7	9	9	62	1	205	8.8
Information provided about the program	2	0	1	1	3	3	5	12	9	59	4	205	8.8
Interaction with program staff	3	0	0	0	2	3	3	11	8	66	2	205	9.0
Bill savings	4	1	2	0	5	3	4	9	4	41	22	205	8.1
Installation process	2	0	0	1	3	2	4	10	8	62	6	205	9.0

SAT2-30. On a scale of 1 to 10 where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Table 152 shows that 63 percent of all respondents are more likely to make future energy efficiency improvements after participating in the program. In separate survey questions, 80 percent of respondents that installed CFL lighting said they plan to continue using CFLs as their existing lights burn out or fail, and among this group, 72 percent indicated that the program was very influential in their decision to use CFLs in the future.

Table 152: Future Energy Efficient Installations – EBAY Residential

Response (n = 205)	% Of Respondents
More likely	63%
Less likely	6%
Same	26%
Refused/Don't Know	5%

PE11: Are you more or less likely to install energy-efficiency products as a result of your experience with this program?

Self-Reported Free Ridership

Table 153 shows the responses to two separate questions regarding what would have been done in absence of the program. The first question asks respondents directly what they would have done in absence of the program. The second question was asked separately to determine which respondents were considering installing energy efficiency equipment prior to learning about the Partnership. In developing a free ridership estimate, we assigned full and partial free ridership rates as follows:

- Those that claim they would have purchased the same equipment at the same time, and were already considering installing the equipment are full free riders.

- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment before they learned about the program are partial free riders, at 50 percent.

- Those that claim they would have purchased the same equipment at a later time, and were already considering installing the equipment are partial free riders, at 50 percent.

- Those that claim they would have purchased the same equipment at a later time, but were not considering installing the equipment before they learned about the program are partial free riders, at 25 percent.

- Those that claim they would have not have purchased equipment, or would have purchased standard equipment are net participants (no free ridership).

For the residential measures in the East Bay Partnership, the self-reported free ridership rate is 26.9 percent. This is substantially higher than the free ridership assumed for these measures for the East Bay Partnership. The net-to-gross ratio used for East Bay is 0.89, which implies a free ridership rate of at least 11 percent for the residential measures.

Table 153: Self-Reported Free Ridership – EBAY Residential

What type of equipment would you have purchased had the rebate not existed?	Before you learned about the program, were you already considering purchasing the measure?	Measures	Quantity Weighted Percent	Contribution to Free Ridership
None	Yes	14	0.8%	0.0%
	No	436	25.0%	0.0%
Standard Equipment	Yes	116	6.7%	0.0%
	No	537	30.8%	0.0%
Same Energy Efficient Equipment, Later	Yes	150	8.6%	4.3%
	No	57	3.3%	0.8%
Same Energy Efficient Equipment, Now or Earlier	Yes	326	18.7%	18.7%
	No	107	6.1%	3.1%
Total		**1,743**	**100.0%**	**26.9%**

For the self-reported free ridership estimates, the results are sensitive to the weights applied to the partial free ridership responses. We have used a weight of 50 percent for partial free riders and 25 percent for partial free riders that were not considering purchasing equipment prior to speaking with a technician about the Partnership. Any such weighting scheme is somewhat arbitrary; these weights were chosen as they are generally consistent with other evaluation studies (such as Express Efficiency) and seemed to be reasonable assumptions for this program.

To test how sensitive the results are to the partial free ridership weighting assumptions, we also calculated free ridership rates using a lower weight for partial free riders. This weighting scheme applies a 50 percent reduction to the weights already assigned (25 percent for partial free riders and 12.5 percent for those that were not considering purchasing equipment prior to learning about the Partnership). With these lower rates, the estimated free ridership for CFLs falls from 30 percent to 26 percent. Similarly, for CFL Fixtures the rate falls from 18 percent to 15 percent.

A similar sensitivity test was done by increasing the weights 50 percent for partial free riders. To calculate a higher bound for the estimate, a weight of 75 percent was used for partial free riders and 37.5 percent for partial free riders that were not considering purchasing equipment prior to learning about the program. With this weighting increase, the estimated free ridership rate for CFLs increases from 30 percent to 34 percent. For CFL Fixtures, the free ridership rate increases from 18 percent to 21 percent.

The sensitivity analysis just discussed is summarized in Table 154. Although the weight ranges used for the sensitivity analysis are also arbitrarily chosen, they do provide useful information on how much the free ridership rates might vary under alternative assumptions. Note that these results do not account for any additional error that may be introduced by response bias previously discussed for these types of questions.

Table 154: Free Ridership Sensitivity Analysis – EBAY Residential

Free Ridership Weighting Scheme	All Measures	CFL	CFL Fixture	Thermostat
Current Weighting (Partial FR weight=50%, 25%)	26.9%	29.9%	17.8%	25.0%
Low Weighting (Partial FR weight=25%, 12.5%)	22.8%	25.5%	14.8%	23.2%
High Weighting (Partial FR weight= 75%, 37.5%)	31.0%	34.4%	20.9%	26.8%

NET IMPACTS RESULTS – EBAY RESIDENTIAL

The preceding information regarding self-reported free ridership, and installation verification is used to adjust the *ex ante* gross impacts to determine the *ex post* net realized impacts for the residential portion of the East Bay Partnership. The specific adjustments and the effect on net realized impacts for both energy and demand are discussed below.

2004-05 Cumulative kWh Impacts – EBAY Residential

The adjustment factors used to determine *ex post* net realized impacts from the *ex ante* gross impacts are shown in Table 155. Free ridership adjustments are derived from the survey data discussed in the previous section. We were able to develop separate free ridership adjustments for the CFLs and CFL Fixtures. For the others we use the average self-reported free ridership rate derived from the survey data from the EBAY residential participants. Finally, we adjust savings based on the verification rate developed from the on-site audit data. Since all the measures were verified as installed, a verification rate of 1.00 is used for the residential part of the East Bay Partnerships.

Table 155: *Ex Post* Net Realization Rates for kWh Impacts – EBAY Residential

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.70	1.00	0.70
CFL Fixtures	0.82	0.82	0.67
Thermostats	0.75	1.00	0.75
Other Measures	0.73	1.00	0.73

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 156. Note that this table shows the change in the *ex ante* and *ex post* net savings, while the previous table shows the change from *ex ante* gross impacts to *ex post* net impacts. For example, with the CFL measure group the *ex post* net impacts are 70 percent of *ex ante* gross impacts (as shown in Table 155), or a reduction of 30 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is less at a 21 percent reduction (as shown in Table 156).

Table 156: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – EBAY Residential

Measure	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	139,114.8	123,812.2	97,380.4	-21.3%
CFL Fixtures	243,401.2	216,627.1	163,663.0	-24.4%
Thermostats	37,630.6	33,491.3	28,223.0	-15.7%
Total	420,146.7	373,930.5	289,266.3	-22.6%

2004-05 Cumulative kW Impacts – EBAY Residential

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 157. As with the kWh impacts, the kW impacts are adjusted to account for verification, free ridership, and the *ex post* net realization rate is the product of the adjustment factors shown in the table.

Table 157: *Ex Post* Net Realization Rates for kW Impacts – EBAY Residential

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.70	1.00	0.70
CFL Fixtures	0.82	0.82	0.67
Thermostats	0.75	1.00	0.75
All Other Measures	0.73	1.00	0.73

The same issues relating to uncertainty discussed with the kWh impacts also apply to the *ex post* kW impacts. For example, there is uncertainty regarding the survey responses used for the self-reported free ridership due to the weighting scheme and the potential for response bias with these types of questions.

Table 158 shows the final *ex post* kW impacts for the residential component using the adjustment factors from Table 157. Net therm impacts are shown in Table 159.

Table 158: Change in *Ex Ante* and *Ex Post* Net kW Impacts – EBAY Residential

Measure	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	17.3	15.4	12.1	-21.3%
CFL Fixtures	30.2	26.9	20.3	-24.4%
Thermostats	58.3	51.9	43.7	-15.7%
Total	105.8	94.1	76.1	-19.1%

Table 159: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – EBAY Residential

Measure	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
Thermostats	10,260.0	9,131.4	7,695.0	-15.7%

The impact table required by the CPUC, showing kWh, kW, and therm savings over time (commercial and residential combined) and taking into account the expected useful life for each measure, is included in *Appendix A*.

SURVEY RESULTS – EBAY COMMERCIAL

Firmographic Summary

As shown in Table 160, of the 323 commercial respondents, 19 percent own their business facility and 79 percent lease their facility. The high percentage of respondents that indicated that they lease their facilities is evidence that the program has been very successful in reaching this particular segment of the hard-to-reach commercial population.

Table 160: Business Ownership – EBAY Commercial

Response (n = 323)	% Of Respondents
Own	19%
Lease/Rent	79%
Refused/Don't know	2%

RENT5: Does your business own, lease or rent the facility?

Table 161 shows that 78 percent of the businesses surveyed have 10 or fewer employees, with 60 percent of the businesses having 5 or fewer employees. As with the high percentage of respondents that lease their facilities, the high percentage of respondents with 10 or fewer employees is further evidence that the program is reaching the small business hard-to-reach market segment. This success is not surprising considering the Partnership's focus on commercial customers in the smaller rate classes.

Table 161: Number of Employees – EBAY Commercial

Response (n = 323)	% Of Respondents
1 to 5	60%
6 to 10	18%
11 to 20	9%
21 to 50	5%
51 to 100	2%
Refused/Don't Know	6%

FIRM5: Which of the following categories describes the number of employees your firm has at this address?

Partnership Awareness and Participant Motivations

Commercial respondents were given a list of sources and were asked to indicate how they first became aware of the program. Table 36 shows that aside from "other sources," most participants became aware of the program from the installer of the equipment (47 percent) or from word of mouth (11 percent).

Table 162: Source of Program Awareness – EBAY Commercial

Response (n = 323)	% Of Respondents
From technician that installed/provide the equipment	47%
Other business, word of mouth, friend, or relative	11%
Mail	4%
Found on your own	1%
Local news / radio / newspaper	1%
Local government	1%
Non-profit agency or environmental group	1%
Other	31%
Don't know	4%

A25: How did you first become aware of the program?

Table 163 shows the most commonly cited reasons for participating in the program. The majority of the respondents (75 percent) participated in order to reduce the amount of their electric bills. Receiving free equipment was the second most common reason for participating (21 percent) and to replace old or broken equipment was the third most common reason for participating (14 percent). (Respondents were allowed to provide multiple responses, which is why percentages sum to over 100 percent).

Table 163: Reasons for Participation – EBAY Commercial

Response (n = 323)	% Of Respondents
Saving money on electric bills	75%
To receive free equipment	21%
Replacing old or broken equipment	14%
Helping protect the environment	11%
Energy crisis	11%
Acquiring the latest technology	5%
Because the program was sponsored by PG&E	4%
To learn more about ways to reduce energy	2%
Because the program was sponsored by local city, county	2%
Previous experience with PG&E programs	2%
Other	7%

A28: Why did your company participate in the program?

Sponsorship of the program by PG&E and their local government was important in the commercial respondents' decision to participate in the program, as shown in Table 164. In regard to local government sponsorship, 79 percent indicated that this was at least somewhat important

in their decision to participate, with 54 percent indicating that it was very important. Respondents put a slightly higher emphasis on PG&E's sponsorship of the program, with 87 percent indicating that it was at least somewhat important and 68 percent indicating that it was very important. For both questions, the importance placed on local government and PG&E sponsorship was slightly lower than what was observed for other Partnerships.

Table 164: Importance Of Government Sponsorship - EBAY Commercial

Response (n = 323)	Local Government	PG&E
Very important	54%	68%
Somewhat important	25%	19%
Not at all important	16%	9%
Refused/Don't know	5%	4%

SPON1: In deciding to participate in the [PARTNERSHIP_NAME] program, how important was it to you that [LOCAL_GOVERNMENT] sponsored the program? Would you say it was…

SPON3: How important was it to you that PG&E sponsored the program? Would you say it was. . .

Table 165 presents responses to a series of attitudinal questions about energy efficient products. Respondents were asked to provide a rating of 1 ("Disagree Completely) to 10 ("Agree Completely") in response to a series of statements regarding the value of energy efficient products, and the ease or difficulty of procuring them. In general, respondents were polarized on most statements with a significant share either completely agreeing or disagreeing. Respondents that provided a rating of 8 or higher were interpreted as "strongly agreeing" while ratings of 3 or less were considered as "strongly disagreeing."

Of all of the statements, statements "actual bill savings will be less than estimated" and "we were not able to finance the upgrades and pay for them over time" received the highest average ratings, with average ratings of 5.7 and 6.1, respectively. With regard to concerns over bill savings, 23 percent indicated that they strongly disagree with the statement (rating of 3 or lower) while 30 percent indicated that they strongly agree (rating of 8 or higher). As for issues with financing the upgrades, 23 percent indicated that they strongly disagree, while 35 percent indicated that they strongly agreed.

Respondents tended to disagree with the statements "there is too much time and hassle involved with selecting a qualified energy efficiency contractor" and "getting a utility rebate is too much hassle," giving the statements average ratings of 4.5 and 4.0, respectively. With regard to the statement about selecting a qualified contractor, 38 percent of respondents strongly disagreed with the statement and 19 percent strongly agreed.

For the last three statements in Table 165, only the responses of business renters are shown. In regard to the statement "the space is rented and I need the owner's consent to make improvements," 39 percent of the renters surveyed indicated that that they strongly disagreed (rating 3 or lower) and 39 percent indicated that they strongly agreed (rating 8 or higher). However, renters tended to disagree with the statement "I'm not at this location for long," with 65 percent of renters indicating that they strongly disagreed. Twelve percent of renters indicated that they strongly agreed with this statement. Renters also tended to disagree with the statement

"It's not worth investing because it's not my building" with 55 percent indicating that they strongly disagree and 16 percent indicating that they strongly agree.

Table 165: Respondent Beliefs About Energy Efficient Products - EBAY Commercial

Rating Scale: 1 = Disagree Completely, 10 = Agree Completely	1%	2%	3%	4%	5%	6%	7%	8%	9%	10 %	R/DK %	N=	Average
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	12	4	7	3	18	7	8	11	1	17	12	323	5.7
I don't have the information I need to make an informed decision about energy efficient investments.	20	3	8	4	21	5	7	7	2	16	6	323	4.6
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	25	5	8	3	19	5	5	6	2	11	12	323	4.5
Lack of financing is a barrier to our organization making energy efficiency investments that we want to make.	15	4	4	2	21	5	6	10	4	21	8	323	6.1
Getting a utility rebate is too much hassle.	32	8	8	2	15	3	5	5	2	9	10	323	4.0
The space is rented and I need the owner's consent to make improvements.*	33	2	4	1	11	2	3	8	6	25	5	255	5.4
I'm not at this location for long.*	56	4	5	2	8	2	4	1	2	9	8	255	3.0
It's not worth investing because it's not my building.*	41	6	8	3	13	2	6	4	1	11	5	255	3.8

PE35A-H: How well do each of the following statements describe your beliefs about energy efficiency investments?

* Results are shown for renters only.

Table 166 shows the degree to which commercial survey respondents recalled referrals to other energy conservation programs by the East Bay Partnership staff. Most respondents (85 percent) were unaware of any other energy efficiency program. Of the remainder that were aware, only a small fraction (1 percent all respondents) recalled being referred to other programs by Partnership staff. As with the residential customers for this Partnership, respondents are generally not retaining any information received about other programs and participants remain generally unaware of other program opportunities.

Table 166: LGP Referrals To Other Energy Efficiency Programs - EBAY Commercial

Response (n = 323)	% Of Respondents
Not aware of other programs	85%
Yes, referred by Partnership	1%
No, not referred by Partnership	11%
Don't Know	2%

A30: Besides the program, are you aware of other programs that are designed to promote energy efficiency?

A32: Did anyone from the [PARTNERSHIP_NAME] program recommend that you participate in any other energy conservation program?

Measure Installation Verification

Table 167 shows the type of product delivery for the commercial portion of the East Bay Partnership. A high percentage of the respondents (93 percent) said that the equipment was installed by the program rather than dropped off, while 4 percent said the equipment was only dropped off. This high rate of partner installed measures results in greater confidence that these measures are installed properly and are achieving savings.

Table 167: Equipment Installation Method - EBAY Commercial

Response (n = 323)	% Of Respondents
Yes, program installed equipment	93%
No, equipment dropped off	4%
Don't Know	2%

VER10: Did someone from the program install all of the products, or were they given to you for you to install later?

Table 168 below shows the results for both the phone survey verification and the on-site visit verification. The first column in each section shows how many sites had each of the measures listed. The second column displays the quantity of measures as it was reported in the PG&E tracking database. The third column shows the quantity of each measure that could be verified either by the verifier on-site, or by the respondent over the phone. The percentage shown in the fourth column shows the percent verified of the sites visited or interviewed. If a percentage is greater than 100 percent, additional measures were found installed that were not included in the PG&E tracking data for this program. It is unclear if this is due to errors in coding of these measures in the system or if these measures were installed through other programs.

Note that most of the commercial measures are tracked in the East Bay Partnerships using general measure descriptions such as "Customized Interior Lighting" without any additional measure detail. Within the on-site sample for East Bay, general custom measure descriptions were used for at least some of the lighting measures for all of the on-sites completed. As a consequence, while it was obvious from the on-sites that significant measure installations had occurred, we were unable to confirm the installation of specific measures for most sites. Only

those measures that were specifically tracked in PG&E's database were verified during the on-sites. As shown in Table 168, only 11 of the 29 sites visited had measures with enough information that they could be verified, and even these 11 sites sometimes had additional measures where the 'custom lighting' descriptions were used. As a result, we were able to verify only a small portion of the commercial measures installed in the East Bay Partnership.

The same verification rate methodology discussed for the residential measures is also used for the commercial measures. For those measures that were found at 10 or more sites, the measure-specific verification rate is used in the net impact calculations. For those found at less than 10 sites, the overall average on-site verification rate is used for that Partnership. All verification rates are capped at 100 percent to avoid crediting the Partnership with measures installed outside the program.

Table 168: Phone and On-site Visit Verification – EBAY Commercial

	On-site Visit				Phone Survey			
	Equipment Reported		Equipment Verified		Equipment Reported		Equipment Verified	
Measures	Sites	Quantity	Quantity	Percent	Sites	Quantity	Quantity	Percent
CFLs	12	25	103	412%	141	728	1,062	146%
CFL Fixtures	0	0	0		2	7	7	100%
Thermostats	6	13	7	54%	17	25	21	84%
T5/T8s	0	0	0		59	1,511	1,479	98%
Total	29	38	110	289%	323	2,271	2,569	113%

Table 169 shows the share of respondents that had some of installed measures removed, either for equipment failure or other reasons. Respondents indicated that 12 percent had removed CFL bulbs, 9 percent had removed T5/T8 lights, and 7 percent had removed the light sensors installed through the program.

Table 169: Failure Rate of Installed Measures – EBAY Commercial

Measure	Failed/Removed	No Problems	R/DK
	%	%	%
CFL Bulb (n = 130)	8%	88%	3%
T5/T8 (n = 59)	3%	97%	0%
Thermostat (n = 14)	0%	100%	0%
Exit Sign (n = 12)	0%	92%	8%

RET20: Have any of those [M_DESC] installed failed or been removed?

Additional questions were asked to differentiate CFL bulbs that were removed because of failure and those that were removed for non-failure reasons (e.g., a remodeling required the removal, the

equipment was upgraded, light too bright or dim). The vast majority of CFL bulbs that were removed were removed because they failed during or after installation. Only one respondent removed CFL lamps for non-failure reasons (they were too dim) and the lamps were not replaced.

Participant Satisfaction with Program

Table 170 shows the commercial customer satisfaction with various program elements of the East Bay Partnership. Respondents were asked to rate a series of statements, with a rating of 1 indicating "extremely dissatisfied" and a rating of 10 indicating "extremely satisfied." Respondents were generally satisfied with their overall program experience, giving it an average satisfaction rating of 8.7 with 82 percent providing a satisfaction rating of 8 or higher.

Respondents gave high satisfaction ratings in response to their interaction with program staff, the audit process, and the installation process. Interaction with program staff received an average satisfaction rating of 8.8, with 80 percent of respondents providing a rating of 8 or higher. The audit process also received an average rating of 8.8, with 71 percent giving a rating of 8 or higher. The installation process received an average satisfaction rating of 8.9, with 80 percent of respondents giving a rating of 8 or higher. The high satisfaction with the installation process likely reflects the high percentage (93 percent) of respondents that stated the program installed their equipment (see Table 167).

Compared to other program elements, respondents gave slightly lower average satisfaction ratings to information provided about the program and bill savings, which both received an average rating of 8.4. With regard to the information provided about the program, 72 percent gave rating of 8 or higher. In response to bill savings, 58 percent gave a satisfaction rating of 8 or higher.

Table 170: Respondent Satisfaction With Program - EBAY Commercial

Rating: 1 = Extremely Dissatisfied, 10 = Extremely Satisfied	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK/NA %	n =	Average
Overall satisfaction with the program experience	1	0	1	0	4	2	6	20	16	46	3	323	8.7
Information provided about the program	2	1	1	0	5	2	11	23	12	37	5	323	8.4
Interaction with program staff	1	0	0	1	4	2	7	17	15	48	4	323	8.8
Bill savings	3	1	1	1	5	2	6	14	8	36	23	323	8.4
Audit Process	0	0	1	0	3	1	9	18	11	42	15	323	8.8
Installation process	1	0	0	0	3	3	7	15	11	54	5	323	8.9

SAT2-30. On a scale of 1 to 10 where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Table 171 shows that 77 percent of all respondents are more likely to make future energy efficiency improvements after participating in the program. In a separate question, 83 percent of

the respondents who had CFLs installed indicated that they plan on replacing the CFLs with new CFLs when they burn out. Of those that will use CFLs as replacements, 93 percent of respondents that installed CFLs indicated that the program was at least somewhat influential in their decision to do so and 64 percent indicated that the program was very influential in their decision.

Table 171: Future Energy Efficient Installations – EBAY Commercial

Response (n = 323)	% Of Respondents
More likely	77%
Less likely	4%
Same	16%
Refused/Don't Know	3%

PE11: Are you more or less likely to install energy-efficiency products as a result of your experience with this program?

Self-Reported Free Ridership

Table 172 shows the responses to two separate questions regarding what would have been done in the absence of the program. The first question asks respondents directly what they would have done in the absence of the program. The second question was asked separately to determine which respondents were considering installing energy efficiency equipment prior to learning about the Partnership. In developing a free ridership estimate, we assigned full and partial free ridership rates as follows:

- Those that claim they would have purchased the same equipment at the same time, and were already considering installing the equipment are full free riders.
- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment before they learned about the program are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, and were already considering installing the equipment are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, but were not considering installing the equipment before they learned about the program are partial free riders, at 25 percent.
- Those that claim they would have not have purchased equipment, or would have purchased standard equipment are net participants (no free ridership).

For the commercial measures in the East Bay Partnership, the self-reported free ridership rate is 14.3 percent. This is similar to the free ridership rates currently used by the East Bay partnership for commercial measures. The net-to-gross ratios used currently range from 0.80 to 1.00, which

implies a free ridership ranging from 0 to 20 percent (or more depending on assumptions regarding spillover).

Table 172: Self-Reported Free Ridership - EBAY Commercial

What type of equipment would you have purchased had the rebate not existed?	Before you learned about the program, were you already considering purchasing the measure?	Measures	Quantity Weighted Percent	Contribution to Free Ridership
None	Yes	207	3.7%	0.0%
	No	1,662	29.6%	0.0%
Standard Equipment	Yes	464	8.3%	0.0%
	No	1,324	23.6%	0.0%
Same Energy Efficient Equipment, Later	Yes	1,014	18.1%	9.0%
	No	435	7.7%	1.9%
Same Energy Efficient Equipment, Now or Earlier	Yes	268	4.8%	4.8%
	No	242	4.3%	2.2%
Total		**5,616**	**100.0%**	**17.9%**

The free ridership rates are shown separate for CFLs and T8/T5s in Table 173 below. For CFLs, the self-reported free ridership rate is 20 percent, which is higher than the 4 percent currently used to calculate the *ex ante* impacts for the commercial components of the East Bay Partnership. Similarly, for T8/T5s the self-reported free ridership rate is 17 percent, which is also higher than the 4 percent rate currently used by the Partnership for these measures.

For the self-reported free ridership estimates, the results are sensitive to the weights applied to the partial free ridership responses. We have used a weight of 50 percent for partial free riders and 25 percent for partial free riders that were not considering purchasing equipment prior to speaking with a technician about the Partnership. Any such weighting scheme is somewhat arbitrary and these weights were chosen as they are generally consistent with other evaluation studies (such as Express Efficiency) and seemed to be reasonable assumptions for this program.

To test how sensitive the results are to the partial free ridership weighting assumptions, we also calculated free ridership rates using a lower weight for partial free riders. This weighting scheme applies a 50 percent reduction to the weights already assigned (25 percent for partial free riders and 12.5 percent for those that were not considering purchasing equipment prior to becoming involved with the Partnership). With these lower rates, the estimated free ridership for CFLs falls from 20 percent to 17 percent. Similarly, for T8/T5s the rate falls from 17 percent to 12 percent.

A similar sensitivity test was done by increasing the weights 50 percent for partial free riders. To calculate a higher bound for the estimate, a weight of 75 percent was used for partial free riders and 37.5 percent for partial free riders that were not considering purchasing equipment prior to

learning about the program. With this weighting increase, the estimated free ridership rate for CFLs increases from 20 percent to 22 percent. For T8/T5s, the free ridership rate increases from 17 percent to 23 percent.

The sensitivity analysis just discussed is summarized in Table 173. Although the weight ranges used for the sensitivity analysis are also arbitrarily chosen, they do provide useful information on how much the free ridership rates might vary under alternative assumptions. Note that these results do not account for any additional error that may be introduced by response bias previously discussed for these types of questions.

Table 173: Free Ridership Sensitivity Analysis – EBAY Commercial

Free Ridership Weighting Scheme	All Measures	CFL	T5/T8	Other Measures
Current Weighting (Partial FR weight=50%, 25%)	17.9%	19.6%	17.4%	17.8%
Low Weighting (Partial FR weight=25%, 12.5%)	11.3%	17.0%	11.5%	10.2%
High Weighting (Partial FR weight= 75%, 37.5%)	24.5%	22.3%	23.3%	25.3%

NET IMPACTS RESULTS – EBAY COMMERCIAL

The preceding information regarding self-reported free ridership, operating hours, and installation verification is used to adjust the *ex ante* gross impacts to determine the *ex post* net realized impacts for the commercial components of the East Bay Partnership. The specific adjustments and the effect on net realized impacts for both energy and demand are discussed below.

2004-05 Cumulative kWh Impacts – EBAY Commercial

As discussed in the *General Evaluation Findings* section of this report, the operating hour assumption for the commercial lighting measures is likely higher than the operating hours actually realized for small businesses targeted by this Partnership. (See the discussion of this issue in *Chapter 3* of this report.) To correct for the operating hour issue, we apply an adjustment to the savings to T8/T5s. Note that this adjustment is not applied to CFLs for this Partnership as the *ex ante* impacts used for this program already assume lower operating hours for this measure.

The adjustment factors used to determine *ex post* net realized impacts from the *ex ante* gross impacts are shown in Table 174. Free ridership adjustments are derived from the survey data discussed in the previous section. We were able to develop separate free ridership adjustments for the CFL and T8/T5 measures. For the others we use the average self-reported free ridership rate derived from the survey data from the East Bay commercial participants.

Finally, we adjust savings based on the verification rate developed from the on-site audit data. As discussed above, we confirmed that all of the measures were installed in our on-site sample and consequently we use a verification adjustment factor of 1.00 for all measures.

Table 174: *Ex Post* Net Realization Rates for kWh Impacts – EBAY Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Operating Hours Adjustment	Verification	*Ex Post* Net Realization Rate
CFLs	0.80	1.00	1.00	0.80
T5/T8	0.83	0.58	1.00	0.48
Other Measures	0.82	1.00	1.00	0.82

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 175. The largest reductions from the original *ex ante* gross impacts are in the T8/T5 and CFL categories and also comprise the majority of the savings.

As shown in Table 175, the Building Tune-up component has a significant share of the savings for the commercial segment of the East Bay Partnership. Due to limited evaluation resources, however, we were unable to do any additional evaluation research on the Building Tune-up savings beyond the phone surveys and verification conducted for the other program components. To determine net impacts for the Building Tune-up component, the adjustment factor for "Other Measures" in Table 174 was applied to the *ex ante* gross impacts.

Note that this table shows the change in the *ex ante* and *ex post* net savings, while the previous table shows the change from *ex ante* gross impacts to *ex post* net impacts. For example, with the CFL measure group the *ex post* net impacts are 80 percent of *ex ante* gross impacts (as shown in Table 174), or a reduction of 20 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is slightly less at a 17 percent reduction (as shown in Table 175).

Table 175: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – EBAY Commercial

Measure	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	204,334.9	196,161.5	163,467.9	-16.7%
T5/T8	1,078,700.7	1,078,607.9	519,286.5	-51.9%
Thermostats	170,000.0	163,200.0	139,400.0	-14.6%
Building Shell – Window Film	25,666.4	24,639.7	21,046.4	-14.6%
Exit Signs	20,628.1	19,803.0	16,915.1	-14.6%
HVAC – Heating Systems Customized Gas Measures	40,648.0	39,022.1	33,331.4	-14.6%
HVAC – Building Tune-Up	3,786,550.0	3,786,550.0	3,104,971.0	-18.0%
Customized Exterior Lighting EUL-16	340,075.1	326,472.1	278,861.6	-14.6%
Customized Interior Lighting EUL-16	1,199,065.9	1,151,103.3	983,234.1	-14.6%
Customized Interior Lighting EUL-4	442,851.9	425,137.8	363,138.5	-14.6%
Interior Fluorescent Lighting EUL-16	2,532,086.2	2,430,802.7	2,076,310.7	-14.6%
Nonresidential Refrigeration	715,824.4	687,191.4	586,976.0	-14.6%
Custom Electric	444,309.9	426,537.5	364,334.1	-14.6%
Total	11,000,741.6	10,755,229.1	8,651,273.3	-19.6%

2004-05 Cumulative kW Impacts – EBAY Commercial

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 176. As with the kWh impacts, the kW impacts are adjusted to account for verification, free ridership, and the *ex post* net realization rate is the product of the adjustment factors shown in the table.

Table 176: *Ex Post* Net Realization Rates for kW Impacts – EBAY Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.80	1.00	0.80
T5/T8	0.83	1.00	0.83
All Other Measures	0.82	1.00	0.82

The same issues relating to uncertainty discussed with the kWh impacts also apply to the *ex post* kW impacts. For example, there is uncertainty regarding the survey responses used for the self-reported free ridership due to the weighting scheme and the potential for response bias with these types of questions.

Table 177 shows the final *ex post* kW impacts for the commercial component using the adjustment factors from Table 176. Therm impacts for the same measures are shown in Table 178.

Table 177: Change in *Ex Ante* and *Ex Post* Net kW Impacts – EBAY Commercial

Measure	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	65.0	62.4	52.0	-16.7%
T5/T8	192.8	192.8	160.0	-17.0%
Building Shell – Window Film	5.9	5.6	4.8	-14.6%
Exit Signs	2.7	2.6	2.2	-14.6%
HVAC – Building Tune-Up	280.0	280.0	229.6	-18.0%
Customized Exterior Lighting EUL-16	121.3	116.4	99.4	-14.6%
Customized Interior Lighting EUL-16	468.7	449.9	384.3	-14.6%
Customized Interior Lighting EUL-4	145.4	139.6	119.2	-14.6%
Interior Fluorescent Lighting EUL-16	859.0	824.6	704.3	-14.6%
Nonresidential Refrigeration	61.2	58.7	50.1	-14.6%
Custom Electric	237.2	227.7	194.5	-14.6%
Total	2,439.0	2,360.3	2,000.6	-15.2%

Table 178: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – EBAY Commercial

Measure	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
Thermostats	425.0	408.0	348.5	-14.6%
HVAC – Heating Systems Customized Gas Measures	7,227.0	6,937.9	5,926.1	-14.6%
HVAC – Building Tune-Up	22,535.0	22,535.0	18,478.7	-18.0%
Customized Interior Lighting EUL-16	27,030.9	25,949.6	22,165.3	-14.6%
Custom Electric	6,720	6,451.2	5,510.4	-14.6%
Total	63,937.9	62,281.7	52,429.0	-15.8%

The impact table required by the CPUC, showing kWh, kW, and therm savings over time (commercial and residential combined) and taking into account the expected useful life for each measure, is included in *Appendix A*.

The following tables show the net kWh, kW, and therm impacts for all the program components (both residential and commercial) for the East Bay Partnerships.

Table 179: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – EBAY Programs

Program	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
EBAY BERK – Single-Family (Direct Install)	160,431.8	142,784.3	110,324.7	-22.7%
EBAY OAK – Single-Family (Direct Install)	259,714.9	231,146.2	178,941.6	-22.6%
EB – Small Biz (Direct Install) – Best	4,211,577.0	4,043,113.9	3,448,620.2	-14.7%
EB – Small Biz (Direct Install) – Senior Housing	1,076,378.9	1,076,378.9	518,168.8	-51.9%
EB – Small Biz (Direct Install) – Smart Lights	1,926,235.7	1,849,186.3	1,579,513.3	-14.6%
EB – Small Biz (Direct Install) – Tune-Up	3,786,550.0	3,786,550.0	3,104,971.0	-18.0%
Total	11,420,888.3	11,129,159.6	8,940,539.7	-19.7%

Table 180: Change in *Ex Ante* and *Ex Post* Net kW Impacts – EBAY Programs

Program	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
EBAY BERK – Single-Family (Direct Install)	36.5	32.5	26.1	-19.5%
EBAY OAK – Single-Family (Direct Install)	69.3	61.7	50.0	-18.9%
EB – Small Biz (Direct Install) – Best	1,288.3	1,236.7	1,055.1	-14.7%
EB – Small Biz (Direct Install) – Senior Housing	191.7	191.7	159.1	-17.0%
EB – Small Biz (Direct Install) – Smart Lights	679.1	651.9	556.8	-14.6%
EB – Small Biz (Direct Install) – Tune-Up	280.0	280.0	229.6	-18.0%
Total	2,544.8	2,454.5	2,076.7	-15.4%

Table 181: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – EBAY Programs

Program	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
EBAY BERK – Single-Family (Direct Install)	3,172.5	2,823.5	2,379.4	-15.7%
EBAY OAK – Single-Family (Direct Install)	7,087.5	6,307.9	5,315.6	-15.7%
EB – Small Biz (Direct Install) – Best	14,372.0	13,797.1	11,785.0	-14.6%
EB – Small Biz (Direct Install) – Smart Lights	27,030.9	25,949.6	22,165.3	-14.6%
EB – Small Biz (Direct Install) – Tune-Up	22,535.0	22,535.0	18,478.7	-18.0%
Total	74,197.9	71,413.1	60,124.0	-15.8%

CONCLUSIONS AND RECOMMENDATIONS

From the analysis presented above, the following conclusions are drawn for the East Bay Partnership:

- **Reporting requirements must include contact information.** As discussed below, Partnerships are not required to submit participant contact information. This has made phone surveys and on-site verification difficult as we can only contact a portion of the customers for each Partnership.

- **Participant satisfaction is high.** For all the Partnerships, customers we surveyed were generally pleased with their program experience and gave high satisfaction ratings to the program overall and to individual program elements discussed during the phone survey.

- **The Partnership has been generally successful in reaching its target customer groups.** As shown in the survey results, the Partnership has been successful in reaching a significant amount of renters, low-income households, small businesses and non-English customer groups. These findings help support the program theory that the current program design is an effective way to recruit these traditionally hard-to-reach customer groups.

- **Both PG&E and local government sponsorship are considered important.** Participants overwhelmingly agreed that PG&E and local government sponsorship was important. For residential participants, 86 percent rated PG&E sponsorship as "Very Important," while 80 percent gave the same rating to local government sponsorship. Similarly, 68 percent of the commercial participants gave a "Very Important" rating to PG&E sponsorship and 54 percent gave the same rating to local government involvement.

- **Commercial renters may have more influence over building energy decisions than originally assumed.** While many of the participants rent their homes or businesses, they still have a high level of control over the equipment decisions at the facility. Most commercial renters (55 percent) strongly disagreed with the statement that it was not worth investing in energy efficiency because they did not own the building. Many of the commercial renters (39 percent) also indicated that they did not need to get the building owner's consent prior to making improvements to the building.

- **Participants still have very low awareness of other energy efficiency programs.** The vast majority of participants are unaware of other energy efficiency programs. Of those that are aware, very few recalled having programs recommended to them by the Partnership staff they interacted with. This indicates that Partnership efforts to funnel participants to other programs have had little or no effect.

- **Self-reported free ridership rates are slightly higher than rates currently used**. The survey questions used to estimate free ridership typically resulted in values that were higher than what is currently assumed for these programs.

Based on these conclusions, we offer the following recommendations for the East Bay Partnership:

- **Continue with the current program implementation method.** The process evaluation showed that the key elements of the program theory were supported through the existing program delivery method. Customer satisfaction is also high for all program elements. As

long as this can be maintained and net savings are achieved, we see no reason why the current program design should be modified except as indicated in the other evaluation recommendations presented in this report.

- **Commercial operating hour assumptions need to be revised for T8/T5s and CFLs.** The current assumptions for annual operating hours are much higher than those found in comparable studies using on-site audit data and logger data for similar small business customers. Correcting for the operating hours substantially lowers the net *ex post* kWh and kW impacts for these measures in the commercial sector.

- **A separate study should be conducted to revise the operating hour assumptions used in the DEER database for small businesses.** A review of the DEER database revealed that in general the operating hours assigned for small businesses for T8/T5s and CFLs are higher than what has been observed for small business customers in this and other evaluation studies. However, the DEER database also delineates operating hours by business type and there is significant variation in operating hours across business categories. There was not a large enough sample of on-sites in this evaluation to produce separate operating hour estimates for each of the business types currently supported in the DEER database. We recommend a separate study be conducted to address this issue, as it appears that the current operating hour assumptions are generally too high for small business customers for T8/T5s and CFLs.

- **Require that full contact information be required for program tracking.** Currently, PG&E does not require that full contact information be reported for its Partnership, which hampered the evaluation effort and led to a more costly survey effort than originally planned. We strongly recommend that complete contact information (contact name, address, phone number) become a reporting requirement for each Partnership.

- **Develop more detailed tracking methods for custom measures.** Currently, most of the commercial measures installed in through the East Bay program are tracked by PG&E as "customized lighting" or a similarly general measure category description. Since there is no indication as to which measures are installed, it is impossible to verify the installation or savings calculations for these measures. We recommend that additional measure codes be used by PG&E in its tracking system so that measure-level detail for these installations is recorded in its participant-tracking database.

- **Improve program referral methods.** If referral to other efficiency programs is to remain a criterion for this Partnership, then the referral methods need to be improved. Possibilities for increasing program awareness include leaving program informational materials with customers, providing a checklist of other measures that could be replaced and matched with a list of related efficiency programs, and follow-up phone calls from other programs to recruit these customers for additional measure installations.

8. EL DORADO COUNTY

PROGRAM BACKGROUND

The following program description is based on our review of the Program Implementation Plan, staff interviews, and reviews of the monthly reports.

PG&E, the City of Placerville and El Dorado County entered into a partnership to reduce electric and gas energy usage through energy efficiency for residents and business owners located in El Dorado Hills, Cameron Park, the City of Placerville and the more rural towns of Georgetown, Garden Valley, Coloma, Pollock Pines, Camino and Pleasant Valley. Marketing tools that were used to promote the program included: local newspaper articles, program fact sheets, presentations to the El Dorado County Chamber of Commerce, sponsorship of the El Dorado Hills Community Exposition, and participation in Holiday (LED) Lighting events. Specific program elements within this Partnership are discussed below.

Single and Multi-Family Direct Install:

This program element provided free in-home energy audits and recommendations on ways to save energy. It also replaced existing inefficient fixtures with new, hardwired energy efficient fixtures, replaced incandescent lamps with screw-in compact fluorescent lamps (CFLs), and installed programmable thermostats. LIEE outreach workers canvassed neighborhoods for qualified LIEE participants and determined which set of programs single and multi-family residences qualify for and could participate in (i.e. LIEE or the County Program).

This element also installed measures in multi-family common areas that are not covered by the LIEE program, and installed measures in the housing units of non-LIEE customers. The program on HTR, limited income and elderly and disabled residents.

Good As Gold Rebate Program and Energy Audits for Small and Medium-Sized Businesses

Good As Gold promoted the statewide Energy Audit program and the Express Efficiency rebate program. Specifically, Good As Gold included:

- Free on-site energy audits to help businesses identify opportunities for energy savings; and
- Rebates to fund installation of prescriptive energy efficiency measures.

Energy Efficiency Services and Incentives for Municipal Buildings

Technical consultants audited energy-consuming systems within City of Placerville facilities to identify potential energy-saving opportunities.

Education and Information Services

PG&E provided energy clinics and classes designed specifically for residents and businesses throughout El Dorado County. Through these free training opportunities, residential and business customers received suggestions for reducing energy bills and operating more energy-efficiently. The classes were advertised on community websites, in the local Mountain Democrat newspaper,

in professional builders news bulletins, and promotional flyers were provided to local Chambers of Commerce to distribute. Classes that were offered include:

- Small Business Energy Management;
- Pool Filtration;
- Restaurant & Food Service Energy Strategies;
- 6 Title 24 Codes and Standards classes; and
- 6 Tailored Energy Efficiency Seminars.

SURVEY RESULTS – EL DORADO (EDOR) RESIDENTIAL

For the residential component of the El Dorado Partnership, 277 participants were surveyed from the Single-Family and Multi-Family Direct Install program components. Key findings from these surveys are discussed below.

Demographic Summary

As shown in Table 182, of the 277 residential survey respondents, 57 percent rent and 43 percent own their homes.

Table 182: Home Ownership – EDOR Residential

Response (n = 277)	% Of Respondents
Rent	57%
Own	43%
Refused/Don't know	0%

DE1: Do you own or rent your home?

Table 183 shows that roughly half of the respondents (54 percent) earn $20,000 or less per year, and about 80 percent earn $50,000 or less per year. The high rate of low-income families is not surprising given that many of the participants have been referred through the CARE and LIEE programs. Nevertheless, this result does indicate that the program has been successful in reaching the low-income residential population.

Table 183: Household Income – EDOR Residential

Response (n = 277)	% Of Respondents
$20,000 or less	54%
$20,000 to $50,000	27%
$50,000 to $75,000	4%
$75,000 to $100,000	1%
More than $100,000	0%
Refused/Don't Know	13%

DE8: Which of the following best represents your annual household income in 2004, before taxes?

The vast majority of the respondents (94 percent) primarily speak English in their homes, while 4 percent primarily speak Spanish (Table 184). Unlike some of the other PG&E Partnership programs, the El Dorado County program does not focus on non-English speaking residential groups.

Table 184: Language Spoken in Home – EDOR Residential

Response (n = 277)	% Of Respondents
English	94%
Spanish	4%
Other*	2%

DE10: What is the primary language spoken in your home?

* Includes Mandarin, Cantonese, Tagalog, Korean, Vietnamese, Russian, Japanese, Other, and Refused/Don't Know

Partnership Awareness and Participant Motivations

Respondents were asked how they first became aware of the Partnership program, and the results are shown in Table 185. The largest group of respondents (35 percent) learned of the program from the technician that provided the equipment. The next most likely source of program information was through personal contacts.

Table 185: Source of Program Awareness – EDOR Residential

Response (n = 277)	% Of Respondents
From technician that installed/provided the equipment	35%
Other	26%
Other business, word of mouth, friend, or relative	19%
Don't know	8%
Mail	5%
School, church, or community organization	3%
Local government	1%
Local news, radio, or newspaper	1%
Found independently	1%
Internet	0%

A25: How did you first become aware of the program?

The most commonly cited reasons for participating in the program were to save money on electric bills (64 percent) and to receive free equipment (31 percent). Table 186 shows in more detail a summary of the responses (respondents were allowed to provide multiple responses).

Table 186: Reasons for Participation – EDOR Residential

Response (n = 277)	% Of Respondents
Saving money on electric bills	64%
To receive free equipment	31%
Other	25%
Energy crisis	12%
Replacing old or broken equipment	7%
Helping protect the environment	4%
Recommended by neighboring business or friend	4%
Acquiring the latest technology	4%
Part of broader facility remodeling/renovation	4%

A28: Why did your household participate in the program?

Sponsorship of the program by PG&E and their local government was also important in the respondents' decision to participate in the program. Shown in Table 187, about 90 percent of respondents thought it was at least somewhat important that either of these organizations sponsored the program. Sixty-eight percent considered it very important that the local government was sponsoring the program and 79 percent said the same for PG&E.

Table 187: Importance of Government Sponsorship – EDOR Residential

Response (n = 277)	Local Government	PG&E
Very important	68%	79%
Somewhat important	20%	14%
Not at all important	7%	3%
Refused/Don't know	5%	4%

SPON1: In deciding to participate in the [PARTNERSHIP_NAME] program, how important was it to you that [LOCAL_GOVERNMENT] sponsored the program? Would you say it was…

SPON3: How important was it to you that PG&E sponsored the program? Would you say it was. . .

Table 188 presents responses to a series of attitudinal questions about energy efficient products. More specifically, respondents were asked if they agreed or disagreed with a series of statements regarding the value of energy efficient products, and the ease or difficulty of procuring them. For the following questions, a rating of 8 or higher was considered as "strongly agreeing" while a rating of 3 or less was viewed as "strongly disagreeing."

The highest level of agreement among all respondents pertained to problems paying for new energy equipment. Thirty-four percent of respondents strongly agreed with the statement "we are not able to finance the upgrades and pay for them over time" (rating of 8 or higher), compared to 23 percent of respondents who strongly disagreed (rating of 3 or lower). This suggests that initial installation costs may remain a significant hurdle for many residents, and supports the program theory assumption that a direct install program is needed to get these customers to adopt energy efficient measures.

Respondents generally agreed with the statement "actual bill savings will be less than estimated" (average score of 5.7), with 31 percent strongly agreeing (rating of 8 or higher). In contrast, 27 percent of respondents strongly disagreed with the statement on bill savings and gave it a rating of 3 or lower. A relatively high percentage of respondents (13) gave a neutral rating of 5.

The respondents were generally split on whether they had enough information to make informed energy decisions, with 23 percent both completely agreeing (score =10) and completely disagreeing (score = 1) with this statement. People were least likely to agree with the statement "getting a utility rebate is too much hassle" (49 percent gave a rating of 3 or less). In comparison, 19 percent strongly agreed with the statement (rating 8 or higher).

The last three statements are different than the other attitudinal questions because they are partially related to household demographics (i.e., home ownership) in addition to perceptions about efficient energy. For these statements, only the responses of home renters are shown. Regarding the statement " the space is rented and I need the owner's consent to make improvements," 68 percent of the renters surveyed strongly agreed (rating 8 or higher) while only 12 percent strongly disagreed (rating 3 or lower). In comparison, renters tended to disagree with the statement "I'm not at this location for long," with 54 percent of renters indicating they strongly disagreed. Only 18 percent of renters said they strongly agreed with this statement. Lastly, renters were somewhat split regarding the statement "It's not worth investing because it's

not my building," with 42 percent saying they strongly disagreed and 32 percent saying they strongly agreed with this statement.

Table 188: Respondent Beliefs About Energy Efficient Products – EDOR Residential

Rating Scale: 1 = Disagree Completely, 10 = Agree Completely	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK %	N=	Average
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	19	5	3	3	13	3	4	7	1	23	20	277	5.7
I don't have the information I need to make an informed decision about energy efficient investments.	23	8	4	3	12	2	3	5	2	23	15	277	5.2
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	29	6	3	2	7	1	3	3	1	16	30	277	4.3
We are not able to finance the upgrades and pay for them over time.	18	5	4	2	11	3	3	3	3	28	21	277	5.9
Getting a utility rebate is too much hassle.	40	5	4	1	6	1	3	4	2	13	22	277	3.8
The space is rented and I need the owner's consent to make improvements.*	10	1	1	0	6	2	2	6	2	60	10	157	8.1
I'm not at this location for long.*	49	3	2	1	5	1	2	1	2	15	18	157	3.6
It's not worth investing because it's not my building.*	32	7	3	3	8	1	2	3	3	26	13	157	5.0

PE35A-H: How well do each of the following statements describe your beliefs about energy efficiency investments?

* Results are shown for renters only.

To assess the effectiveness of referrals, respondents were asked if they were aware of other energy efficiency programs. Then as a follow-up question, they were asked if anyone from the Partnership had referred them to the other programs. As shown in Table 189, 82 percent were unaware of other energy efficiency programs. Only 1 percent said that they had been referred to other programs by the Partnership staff they talked with. As with the other Partnerships, the low level of awareness of other programs indicates that the methods being used to promote other programs are generally ineffective.

Table 189: LGP Referrals to Other Energy Efficiency Programs – EDOR Residential

Response (n = 277)	% Of Respondents
Not aware of other programs	82%
Yes, referred by Partnership	1%
No, not referred by Partnership	13%
Don't Know	1%

A30: Besides the [PARTNERSHIP_NAME] program, are you aware of other programs that are designed to promote energy efficiency?

A32: Did anyone from the [PARTNERSHIP_NAME] program recommend that you participate in any other energy conservation program?

Measure Installation Verification

As shown in Table 190, 97 percent of the 277 participants interviewed had their energy efficiency equipment installed for them, as opposed to having it dropped off for them to install. This high rate of partner installed measures results in greater confidence that these measures are installed properly and are achieving savings.

Table 190: Equipment Installation Method – EDOR Residential

Response (n = 277)	% Of Respondents
Yes, program installed equipment	97%
No, equipment dropped off	2%
Refused/ Don't know	1%

VER10: Did someone from the program install all of the products, or were they given to you for you to install later?

Table 191 shows the share of respondents that had some of the installed measures removed, either for equipment failure or other reasons. Respondents indicated that 3-9 percent had removed lighting measures while 8 percent had removed the thermostat installed through the program.

Note that Table 191 shows the share of *respondents* with failed or removed measures. The following tables show the results of additional verification questions that address the share of *measures* that are no longer in place. The results that are a function of the share of measures are the ones that are used later in this section to adjust the net impacts for this Partnership.

Table 191: Failure Rate of Installed Measures – EDOR Residential

Measure	Failed/Removed	No Problems	R/DK
	%	%	%
CFL Bulb (n = 267)	9%	88%	2%
T5/T8 (n = 0)	0%	0%	0%
CFL Fixture (n = 265)	3%	95%	1%
Thermostat (n = 100)	8%	89%	3%
Other (n = 0)	0%	0%	0%

RET20: Have any of those [M_DESC] installed failed or been removed?

Additional questions were asked to differentiate CFL bulbs that were removed because of failure and those that were removed for non-failure reasons (e.g., a remodeling required the removal, the equipment was upgraded, light too bright or dim). The vast majority of CFL bulbs that were removed were removed because they failed during or after installation.

Table 192 shows for those respondents that did replace CFL bulbs for non-failure reasons, the type of replacement lighting that they installed (as in the preceding table, the share of *respondents* is shown). The table shows that almost all of respondents replaced CFL bulbs with incandescent lights, and the main reason for this was because the CFL light was not bright enough.

Table 192: Lighting Used to Replace Removed CFL Bulbs – EDOR Residential

Replacement Lighting	CFL Bulb (n = 11)
	%
Incandescent bulbs	91%
CFLs	9%
Other	0%
Refused/Don't know	0%

RET84: Were they replaced with….?

Table 193 below shows the results for both the phone survey verification and the on-site visit verification. The first column in each section shows how many sites had each of the measures listed. In addition to CFLs, CFL Fixtures, Thermostats, and T5/T8s, there are other miscellaneous measures that were omitted from the table.

The second column displays the quantity of measures as it was reported in the PG&E tracking database. The third column shows the quantity of each measure that could be verified either by the verifier on-site, or by the respondent over the phone. The percentage shown in the fourth column shows the percent verified of the sites visited or interviewed. If a percentage is greater

than 100 percent, additional measures were found installed that were not included in the PG&E tracking data for this program. It is unclear if this is due to errors in coding of these measures in the system or if these measures were installed through other programs.

The on-site visits for the residential part of the Fresno Partnership verified over 100 percent of the combined quantities of measures. Only CFL Fixtures were verified at slightly less than 100 percent.

Table 193: Phone and On-site Visit Verification – EDOR Residential

	On-site Visit				Phone Survey			
	Equipment Reported		Equipment Verified		Equipment Reported		Equipment Verified	
Measures	Sites	Quantity	Quantity	Percent	Sites	Quantity	Quantity	Percent
CFLs	22	45	54	120%	275	643	696	108%
CFL Fixtures	22	64	63	98%	277	939	861	92%
Thermostats	8	8	8	100%	106	124	116	94%
T5/T8s	0	0	0		0	0	0	
Total	22	117	125	107%	277	1,706	1,673	98%

The initial plan for the evaluation was to analyze the on-site and phone verification results and create an adjustment factor using data from both sources. The phone survey results, however, differed substantially from the on-site results across the various Partnerships. In some cases the phone verification rate was greater than the on-site rate while in other cases the phone verification rate was less than the on-site rate. These differences occurred across both Partnerships and measures. Due to this wide variability and lack of a consistent trend, we did not use the phone survey data for the verification rates and relied only on the on-site data as we believe that the on-site data are more accurate for verification purposes.

Verification adjustment factors for use in the net impact analysis were developed using the following method. For those measures that were found at more than 10 sites, the measure-specific verification rate is used. For those measures that had a sample of 10 sites or less, the overall average on-site verification rate was applied for that Partnership. While 10 sites is still a relatively small sample, we believe that the benefits of using a measure-specific adjustment factor outweigh the uncertainty of the small sample. Finally, if the verification rate was greater than 100 percent, it was capped at 100 percent as it was not possible to determine if the additional measures were installed through the Partnership program, some other efficiency program, or purchased by the participant outside any efficiency program. Therefore, to be conservative the verification rate is capped at 100 percent. The resulting verification rate is used to adjust impacts at the measure level as part of the net realized impacts calculations discussed at the end of this section.

Participant Satisfaction with Program

Shown in Table 194 are the satisfaction scores for various program elements. The overall satisfaction level was high (9.0 out of 10) and all elements scored well (8.2 to 9.1 out of 10). On a relative basis, the installation process scored the highest (9.1) and had very low levels of dissatisfaction (only 4 percent gave anything less than a 5). Interaction with program staff was similarly high (8.9) with few discontent respondents (4 percent less than 5). Respondents were also generally satisfied with the information provided about the program (8.4). Despite participant concerns about realizing expected billing savings (see Table 188– Respondent Beliefs), customer satisfaction with bill savings was quite high (8.2) with only 5 percent giving a score of less than 5. Compared to the other questions, however, there was a larger percentage of respondents in the Refused/Don't Know category, which means they likely do not know if they have saved money on their bills.

Table 194: Satisfaction with Program Elements – EDOR Residential

Rating Scale: 1 = Extremely Dissatisfied, 10 = Extremely Satisfied	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK %	N=	Average
Overall satisfaction with the program experience	1	2	0	1	4	3	2	13	12	62	2	277	9.0
Information provided about the program	4	1	1	2	4	2	5	16	9	47	9	277	8.4
Interaction with program staff	2	1	1	0	3	3	4	10	10	59	6	277	8.9
Bill savings	3	1	1	0	6	2	4	11	5	36	29	277	8.2
Installation process	1	1	1	1	1	2	3	9	11	65	5	277	9.1

SAT2-30. On a scale of 1 to 10 where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Table 195 shows that 65 percent of all respondents are more likely to make future energy efficiency improvements after participating in the program. In separate survey questions, 75 percent of respondents that installed CFL lighting said they plan to continue using CFLs as their existing lights burn out or fail, and among this group, 65 percent indicated that the program was very influential in their decision to use CFLs in the future.

Table 195: Future Energy Efficient Installations – EDOR Residential

Response (n = 277)	% Of Respondents
More likely	65%
Less likely	5%
Same	20%
Refused/Don't Know	10%

PE11: Are you more or less likely to install energy-efficiency products as a result of your experience with this program?

Table 196 shows the responses to two separate questions regarding what would have been done in absence of the program. The first question asks respondents directly what they would have done in absence of the program. The second question was asked separately to determine which respondents were considering installing energy efficiency equipment prior to learning about the Partnership. In developing a free ridership estimate, we assigned full and partial free ridership rates as follows:

- Those that claim they would have purchased the same equipment at the same time, and were already considering installing the equipment are full free riders.
- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment before they learned about the program are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, and were already considering installing the equipment are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, but were not considering installing the equipment before they learned about the program are partial free riders, at 25 percent.
- Those that claim they would have not have purchased equipment, or would have purchased standard equipment are net participants (no free ridership).

For the residential measures in the El Dorado Partnership, the self-reported free ridership rate is 18.3 percent. This is slightly higher than the free ridership rate currently used by the El Dorado partnership for residential measures. The net-to-gross ratio used currently is 0.89, which implies free ridership of 11 percent (or more depending on assumptions regarding spillover).

Table 196: Self-Reported Free Ridership – EDOR Residential

What type of equipment would you have purchased had the rebate not existed?	Before you learned about the program, were you already considering purchasing the measure?	Measures	Quantity Weighted Percent	Contribution to Free Ridership
None	Yes	38	2.8%	0.0%
	No	569	42.6 %	0.0%
Standard Equipment	Yes	31	2.3%	0.0%
	No	285	21.3%	0.0%
Same Energy Efficient Equipment, Later	Yes	160	12.0%	6.0%
	No	83	6.2%	1.6%
Same Energy Efficient Equipment, Now or Earlier	Yes	124	9.3%	9.3%
	No	47	3.6%	1.8%
Total		**1,337**	**100.0%**	**18.6%**

The free ridership rates are shown for CFLs and CFL Fixtures in Table 197 below. For CFLs, the self-reported free ridership rate is 26 percent, which is higher than the 11 percent currently used to calculate the *ex ante* impacts for the Stockton Partnership. For T8/T5s the self-reported free ridership rate is 14 percent, which is also higher than the 11 percent rate currently used by the Partnership for these measures.

For the self-reported free ridership estimates, the results are sensitive to the weights applied to the partial free ridership responses. We have used a weight of 50 percent for partial free riders and 25 percent for partial free riders that were not considering purchasing equipment prior to speaking with a technician about the Partnership. Any such weighting scheme is somewhat arbitrary and these weights were chosen as they are generally consistent with other evaluation studies (such as Express Efficiency) and seemed to be reasonable assumptions for this program.

To test how sensitive the results are to the partial free ridership weighting assumptions, we also calculated free ridership rates using a lower weight for partial free riders. This weighting scheme applies a 50 percent reduction to the weights already assigned (25 percent for partial free riders and 12.5 percent for those that were not considering purchasing equipment prior to being involved with the Partnership). With these lower rates, the estimated free ridership for CFLs falls from 26 percent to 19 percent. Similarly, for CFL Fixtures the rate falls from 14 percent to 11 percent.

A similar sensitivity test was done by increasing the weights 50 percent for partial free riders. To calculate a higher bound for the estimate, a weight of 75 percent was used for partial free riders and 37.5 percent for partial free riders that were not considering purchasing equipment prior to learning about the program. With this weighting increase, the estimated free ridership rate for

CFLs increases from 26 percent to 32 percent. For CFL Fixtures, the free ridership rate increases from 14 percent to 17 percent.

The sensitivity analysis just discussed is summarized in Table 197. Although the weight ranges used for the sensitivity analysis are also arbitrarily chosen, they do provide useful information on how much the free ridership rates might vary under alternative assumptions. Note that these results do not account for any additional error that may be introduced by response bias previously discussed for these types of questions.

Table 197: Free Ridership Sensitivity Analysis – EDOR Residential

Free Ridership Weighting Scheme	All Measures	CFL	CFL Fixture	Thermostat
Current Weighting (Partial FR weight=50%, 25%)	18.6%	25.7%	13.9%	10.3%
Low Weighting (Partial FR weight=25%, 12.5%)	13.9%	18.9%	10.9%	6.5%
High Weighting (Partial FR weight= 75%, 37.5%)	23.2%	32.4%	16.9%	14.1%

NET IMPACTS RESULTS – EDOR RESIDENTIAL

The preceding information regarding self-reported free ridership, and installation verification is used to adjust the *ex ante* gross impacts to determine the *ex post* net realized impacts for the residential portion of the El Dorado Partnership. The specific adjustments and the effect on net realized impacts for both energy and demand are discussed below.

2004-05 Cumulative kWh Impacts – EDOR Residential

The adjustment factors used to determine *ex post* net realized impacts from the *ex ante* gross impacts are shown in Table 198. Free ridership adjustments are derived from the survey data discussed in the previous section. We were able to develop separate free ridership adjustments for the CFLs and CFL Fixtures. For the others we use the average self-reported free ridership rate derived from the survey data from the El Dorado residential participants.

Finally, we adjust savings based on the verification rate developed from the on-site audit data. Since all measures were verified as installed, we use a verification adjustment factor of 1.00 for the residential component of the El Dorado Partnership.

Table 198: *Ex Post* Net Realization Rates for kWh Impacts – EDOR Residential

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.84	1.00	0.84
CFL Fixtures	0.86	0.98	0.84
Thermostats	0.90	1.00	0.90
Other Measures	0.81	1.00	0.81

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 199. Note that this table shows the change in the *ex ante* and *ex post* net savings, while the previous shows the change from *ex ante* gross impacts to *ex post* net impacts. For example, with CFLs the *ex post* net impacts are 84 percent of *ex ante* gross impacts (as shown in Table 198), or a reduction of 16 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is less at a 6 percent reduction (as shown in Table 199).

Table 199: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – EDOR Residential

Measure	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	226,307.5	201,413.6	167,467.5	-16.9%
CFL Fixtures	444,716.3	395,797.5	374,806.9	-5.3%
Thermostats	101,008.6	89,897.6	90,907.7	1.1%
Total	772,032.3	687,108.7	633,182.1	-7.8%

2004-05 Cumulative kW Impacts – EDOR Residential

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 200. As with the kWh impacts, the kW impacts are adjusted to account for verification, free ridership, and the *ex post* net realization rate is the product of the adjustment factors shown in the table.

Table 200: *Ex Post* Net Realization Rates for kW Impacts – EDOR Residential

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.84	1.00	0.84
CFL Fixtures	0.86	0.98	0.84
Thermostats	0.90	1.00	0.90
All Other Measures	0.81	1.00	0.81

The same issues relating to uncertainty discussed with the kWh impacts also apply to the *ex post* kW impacts. For example, there is uncertainty regarding the survey responses used for the self-reported free ridership due to the weighting scheme and the potential for response bias with these types of questions.

Table 201 shows the final *ex post* kW impacts for the residential component using the adjustment factors from Table 200. The same calculations are shown for net therm impacts in Table 202.

Table 201: Change in *Ex Ante* and *Ex Post* Net kW Impacts – EDOR Residential

Measure	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings (kW)	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	28.1	25.0	20.8	-16.9%
CFL Fixtures	37.2	33.1	31.3	-5.3%
Thermostats	156.6	139.3	140.9	1.1%
Total	221.8	197.4	193.0	-2.2%

Table 202: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – EDOR Residential

Measure	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings (kW)	Difference Between Evaluation and PG&E Net Savings (%)
Thermostats	27,540.0	24,510.6	24,786.0	1.1%

The impact table required by the CPUC, showing kWh, kW, and therm savings over time (commercial and residential combined) and taking into account the expected useful life for each measure, is included in *Appendix A*.

SURVEY RESULTS – EL DORADO (EDOR) COMMERCIAL

For the commercial part of the El Dorado partnership, 58 participants were surveyed from the Good as Gold Rebate Program.

Firmographic Summary

As shown in Table 203, of the 58 commercial respondents, 67 percent own their business facility and 31 percent rent their facility.

Table 203: Business Ownership – EDOR Commercial

Response (n = 58)	% Of Respondents
Own	67%
Rent	31%
Refused/Don't know	2%

RENT5: Does your business own, lease or rent the facility?

Table 204 shows that 55 percent of the businesses surveyed have 10 or fewer employees, and 33 percent have 5 or fewer employees. Compared to the other partnerships, the El Dorado commercial program is serving relatively fewer small businesses.

Table 204: Number of Employees – EDOR Commercial

Response (n = 58)	% Of Respondents
1 to 5	33%
6 to 10	22%
11 to 20	21%
21 to 50	16%
51 to 100	3%
Greater than 100	2%
Refused/Don't Know	3%

FIRM5: Which of the following categories describes the number of employees your firm has at this address?

Partnership Awareness and Participant Motivations

Commercial respondents were asked to indicate how they first became aware of the Partnership program, and the results are shown in Table 205. The largest group of respondents (55 percent) learned of the program from the technician that provided the equipment.

Table 205: Source of Program Awareness – EDOR Commercial

Response (n = 58)	% Of Respondents
From technician that installed/provided the equipment	55%
Other	28%
Other business, word of mouth, friend, or relative	9%
Mail	5%
Local news, radio, or newspaper	2%
Found independently	2%

A25: How did you first become aware of the program?

The most commonly cited reasons for participating in the program were to save money on electric bills (69 percent) and to receive free equipment (34 percent). Table 206 shows in more detail a summary of the responses (respondents were allowed to provide multiple responses).

Table 206: Reasons for Participation – EDOR Commercial

Response (n = 58)	% Of Respondents
Saving money on electric bills	69%
To receive free equipment	34%
Replacing old or broken equipment	31%
Other	15%
Helping protect the environment	5%
Energy crisis	3%
Acquiring the latest technology	3%

A28: Why did your company participate in the program?

As shown in Table 207, the commercial participants considered utility sponsorship of the program to be more important than local government sponsorship. When asked about local government sponsorship, 52 percent indicated that it was "Very important" for their participation decision, while 71 percent said that PG&E sponsorship was "Very important." The importance placed on local government sponsorship was somewhat lower than that generally observed in the other Partnerships.

Table 207: Importance Of Government Sponsorship - EDOR Commercial

Response (n = 58)	Local Government	PG&E
Very important	52%	71%
Somewhat important	29%	19%
Not at all important	19%	10%
Refused/Don't know	0%	0%

SPON1: In deciding to participate in the [PARTNERSHIP_NAME] program, how important was it to you that [LOCAL_GOVERNMENT] sponsored the program? Would you say it was…

SPON3: How important was it to you that PG&E sponsored the program? Would you say it was. . .

Table 208 shows the responses to a series of attitudinal questions regarding potential barriers to installing energy efficient equipment, where a score of 10 meant "Agree Completely" and a rating of 1 meant "Disagree Completely." In the discussion below, ratings of 8 or higher are interpreted as "strongly agree" and ratings of 3 or less are considered as "disagree completely."

The respondents agreed most that lack of financing is a barrier to energy efficient investments, with an overall score of 5.8. Forty percent agreed (rated 8 or higher) that insufficient financing is a problem for them, while 29 percent disagreed by giving a score of 3 or lower.

The respondents agreed the least with the statement that "I don't have the information I need to make informed decisions about energy efficient investments" by giving an overall score of 4.1. Forty percent of respondents completely disagreed with this statement by giving a score of 1. Respondents similarly disagreed with the statement "Getting a utility rebate is too much hassle" by giving an overall score of 4.3.

More neutral responses were received for questions pertaining to bill savings and difficulties selecting a qualified energy efficiency contractor. When asked if they were concerned that "bill savings will be less than what was estimated," 29 percent gave a neutral rating of 5, and the overall score was 4.6. When asked about perceived "hassles" in selecting a qualified contractor, respondents gave an overall score of 4.7.

The last three statements are somewhat different than the other attitudinal questions because they are related to business characteristics (i.e., ownership v. renting) in addition to perceptions about efficient energy. For these statements, only the responses of business renters are shown. Among renters alone, 61 percent strongly disagreed with the statement that they needed the owner's consent to make changes to the facility and 83 percent strongly disagreed with the statement that they would not be at that location for long. Finally, 61 percent of renters also strongly disagreed with the statement that it was not worth investing in energy efficiency because they did not own the building.

Table 208: Respondent Beliefs About Energy Efficient Products – EDOR Commercial

Rating Scale: 1 = Disagree Completely, 10 = Agree Completely	1%	2%	3%	4%	5%	6%	7%	8%	9%	10 %	R/DK %	N=	Average
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	28	2	5	0	29	7	3	9	3	7	7	58	4.6
I don't have the information I need to make an informed decision about energy efficient investments.	40	5	3	2	22	3	7	5	0	12	10	58	4.1
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	24	9	3	2	24	3	5	9	2	12	7	58	4.7
Lack of financing is a barrier to our organization making energy efficiency investments that we want to make.	21	3	5	3	17	2	9	14	2	24	0	58	5.8
Getting a utility rebate is too much hassle.	36	7	2	0	12	2	5	16	3	7	11	58	4.3
The space in rented and I need the owner's consent to make improvements.*	44	11	6	0	11	0	0	0	0	22	6	18	3.8
I'm not at this location for long.*	83	0	0	0	0	0	0	6	0	11	0	18	2.4
It's not worth investing because it's not my building.*	50	0	11	6	6	6	0	6	0	17	0	18	3.8

PE35A-H: How well do each of the following statements describe your beliefs about energy efficiency investments?

* Results are shown for renters only.

Table 209 shows the degree to which commercial survey respondents recalled referrals to other energy conservation programs by the Silicon Valley Partnership staff. Most respondents (76 percent) were unaware of any other energy efficiency program. Of the remainder that were aware, only a fraction (1 percent of all respondents) recalled being referred to other programs by Partnership staff. Thus, respondents are generally not retaining any information received about other programs and participants remain generally unaware of other program opportunities.

Table 209: LGP Referrals To Other Energy Efficiency Programs - EDOR Commercial

Response (n = 58)	% Of Respondents
Not aware of other programs	76%
Yes, referred by Partnership	1%
No, not referred by Partnership	8%
Don't Know	0%

A30: Besides the program, are you aware of other programs that are designed to promote energy efficiency?

A32: Did anyone from the [PARTNERSHIP_NAME] program recommend that you participate in any other energy conservation program?

Measure Installation Verification

Table 210 shows that among the commercial customers surveyed, only 40 percent had the equipment installed by the program. The low installation rate appears to be a contractor issue, as the Program Implementation Plan for El Dorado clearly states that measures will be installed by the program. This installation rate is much lower than for the other partnerships, where the installation rate was typically 85% or higher

Table 210: Equipment Installation Method - EDOR Commercial

Response (n = 58)	% Of Respondents
Yes, program installed equipment	40%
No, equipment dropped off	59%
Don't Know	1%

VER10: Did someone from the program install all of the products, or were they given to you for you to install later?

A series of questions were asked during the phone surveys to verify the installation of measures. Respondents were asked to confirm the type and number of measures installed based on the information contained in PG&E's tracking system about the installation.

Table 211 shows the share of respondents that had some of installed measures removed, either for equipment failure or other reasons. Respondents indicated that 22 percent had removed sensors, 18 percent had removed CFL bulbs, and 17 percent had removed T5/T8 lighting installed through the program.

Note that Table 211 shows the share of *respondents* with failed or removed measures. The following tables show the results of additional verification questions that address the share of *measures* that are no longer in place. The results that are a function of the share of measures are the ones that are used later in this section to adjust the net impacts for this Partnership.

Table 211: Failure Rate of Installed Measures – EDOR Commercial

Measure	Failed/Removed	No Problems	R/DK
	%	%	%
CFL Bulb (n = 33)	18%	82%	0%
T5/T8 (n = 6)	17%	83%	0%
Exit Sign (n = 26)	0%	100%	0%
CFL Fixture (n = 0)	0%	0%	0%
Sensor (n = 9)	22%	78%	0%
Thermostat (n = 6)	0%	100%	0%
Other (n = 8)	0%	100%	0%

RET20: Have any of those [M_DESC] installed failed or been removed?

Additional questions were asked to differentiate CFL bulbs that were removed because of failure and those that were removed for non-failure reasons (e.g., a remodeling required the removal, the equipment was upgraded, light too bright or dim). The vast majority of CFL bulbs that were removed were removed because they failed during or after installation. Only one respondent replaced CFL lamps for non-failure reasons (which were not provided), and the lamps were replaced with new CFLs.

Table 212 below shows the results for both the phone survey verification and the on-site verification. The first column in each section shows how many sites had each of the measures listed. The second column displays the quantity of measures as it was reported in the PG&E tracking database. The third column shows the quantity of each measure that could be verified either by the verifier on-site, or by the respondent over the phone. The percentage shown in the fourth column shows the percent verified of the sites visited or interviewed. If a percentage is greater than 100 percent, additional measures were found installed that were not included in the PG&E tracking data for this program. It is unclear if this is due to errors in coding of these measures in the system or if these measures were installed through other programs.

With the 11 on-sites, 96 percent of the measures listed were verified. Of this, 76 percent of the CFLs were verified as installed while 104 percent of the T8/T5 measures were confirmed.

The same verification rate methodology discussed for the residential measures is also used for the commercial measures. For those measures that were found at 10 or more sites, the measure-specific verification rate is used in the net impact calculations. For those found at less than 10 sites, the overall average on-site verification rate is used for that Partnership. All verification rates are capped at 100 percent to avoid crediting the Partnership with measures installed outside the program.

Table 212: Phone and On-site Visit Verification – EDOR Commercial

	On-site Visit				Phone Survey			
	Equipment Reported		Equipment Verified		Equipment Reported		Equipment Verified	
Measures	Sites	Quantity	Quantity	Percent	Sites	Quantity	Quantity	Percent
CFLs	7	265	201	76%	33	1,554	1,679	108%
CFL Fixtures	0	0	0		0	0	0	
Thermostats	0	0	0		7	50	48	96%
T5/T8s	1	692	722	104%	6	1,422	1,422	100%
Total	11	957	923	96%	58	3,026	3,149	104%

Participant Satisfaction with Program

Table 213 shows the commercial customer satisfaction with various aspects of the El Dorado Partnership. For the most part, participants were satisfied with their overall program experience, with an average satisfaction rating of 8.7 (on a 10-point scale), and 88 percent providing a satisfaction rating of 8 or higher. The installation and audit processes received average scores of 8.6 and 8.8 respectively. Similarly, interaction with program staff received an overall rating of 8.7, suggesting that respondents were generally pleased with the personal interface aspects of the program.

Information about the program received the lowest average satisfaction rating of 8.3 (which is still very good). While not many respondents were dissatisfied with the information provided (2 percent with a rating of 3 or lower), a relatively large number of respondents (19 percent) gave scores in the middle range of 5 to 7.

Satisfaction with bill savings received the second lowest rating, with an average rating of 8.4. Fifty-two percent of respondents gave bill savings a satisfaction rating of 8 or higher, with 33 percent giving a rating of 10. Compared to the other questions, however, there was a larger percentage of respondents in the Refused/Don't Know category, which means they likely do not know if they have saved money on their bills.

Table 213: Respondent Satisfaction With Program - EDOR Commercial

Rating: 1 = Extremely Dissatisfied, 10 = Extremely Satisfied	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK/NA %	n =	Average
Overall satisfaction with the program experience	0	0	3	0	3	3	2	26	19	43	0	58	8.7
Information provided about the program	0	2	0	2	7	2	10	31	10	36	0	58	8.3
Interaction with program staff	0	2	2	0	2	5	3	28	7	50	2	58	8.7
Bill savings	0	0	3	2	3	2	5	14	5	33	33	58	8.4
Audit Process	0	0	0	0	2	0	12	24	5	38	19	58	8.8
Installation process	3	0	0	0	2	0	12	17	12	40	14	58	8.6

SAT2-30. On a scale of 1 to 10 where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Table 214 shows that 72 percent of all respondents are more likely to make future energy efficiency improvements after participating in the program. In separate survey questions, 94 percent of respondents that installed CFL lighting said they plan to continue using CFLs as their existing lights burn out or fail, and among this group, 52 percent indicated that the program was very influential in their decision to use CFLs in the future.

Table 214: Future Energy Efficient Installations – EDOR Commercial

Response (n = 58)	% Of Respondents
More likely	72%
Less likely	3%
Same	24%
Refused/Don't Know	0%

PE11: Are you more or less likely to install energy-efficiency products as a result of your experience with this program?

Self-Reported Free Ridership

Table 215 shows the responses to two separate questions regarding what would have been done in the absence of the program. The first question asks respondents directly what they would have done in the absence of the program. The second question was asked separately to determine which respondents were considering installing energy efficiency equipment prior to learning about the Partnership. In developing a free ridership estimate, we assigned full and partial free ridership rates as follows:

- Those that claim they would have purchased the same equipment at the same time, and were already considering installing the equipment are full free riders.

- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment before they learned about the program are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, and were already considering installing the equipment are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, but were not considering installing the equipment before they learned about the program are partial free riders, at 25 percent.
- Those that claim they would have not have purchased equipment, or would have purchased standard equipment are net participants (no free ridership).

For the commercial measures in the El Dorado Partnership, the self-reported free ridership rate is 23.0 percent. This is similar to the free ridership rates currently used for the El Dorado Partnership. The net-to-gross ratios for the commercial measures for this program currently range from 0.70 to 0.96. This implies free ridership rates of 4 to 30 percent (or more depending on assumptions made regarding spillover).

Table 215: Self-Reported Free Ridership - EDOR Commercial

What type of equipment would you have purchased had the rebate not existed?	Before you learned about the program, were you already considering purchasing the measure?	Measures	Quantity Weighted Percent	Contribution to Free Ridership
None	Yes	61	1.5%	0.0%
	No	1,576	38.8%	0.0%
Standard Equipment	Yes	205	5.0%	0.0%
	No	432	10.6%	0.0%
Same Energy Efficient Equipment, Later	Yes	220	5.4%	2.7%
	No	359	8.8%	2.2%
Same Energy Efficient Equipment, Now or Earlier	Yes	852	21.0%	21.0%
	No	355	8.1%	4.4%
Total		**4,060**	**100.0%**	**30.3%**

The free ridership rates are shown separate for CFLs and T8/T5s in Table 216. For CFLs, the self-reported free ridership rate is 20 percent, which is higher than the 4 percent currently used to calculate the *ex ante* impacts for the El Dorado Partnership. Similarly, for T8/T5s the self-reported free ridership rate is 30 percent, which is also higher than the 4 percent rate currently used by the Partnership for these measures.

For the self-reported free ridership estimates, the results are sensitive to the weights applied to the partial free ridership responses. We have used a weight of 50 percent for partial free riders and 25 percent for partial free riders that were not considering purchasing equipment prior to speaking with a technician about the Partnership. Any such weighting scheme is somewhat arbitrary and these weights were chosen as they are generally consistent with other evaluation studies (such as Express Efficiency) and seemed to be reasonable assumptions for this program.

To test how sensitive the results are to the partial free ridership weighting assumptions, we also calculated free ridership rates using a lower weight for partial free riders. This weighting scheme applies a 50 percent reduction to the weights already assigned (25 percent for partial free riders and 12.5 percent for those that were not considering purchasing equipment prior to participating in the Partnership). With these lower rates, the estimated free ridership for CFLs falls from 20 percent to 13 percent. For T5/T8s, there were no partial free riders so the estimated free ridership rate does not change with the new weighting scheme.

A similar sensitivity test was done by increasing the weights 50 percent for partial free riders. To calculate a higher bound for the estimate, a weight of 75 percent was used for partial free riders and 37.5 percent for partial free riders that were not considering purchasing equipment prior to learning about the program. With this weighting increase, the estimated free ridership rate for CFLs increases from 20 percent to 28 percent while the rate for T5/T8s remains unchanged.

The sensitivity analysis just discussed is summarized in Table 216. Although the weight ranges used for the sensitivity analysis are also arbitrarily chosen, they do provide useful information on how much the free ridership rates might vary under alternative assumptions. Note that these results do not account for any additional error that may be introduced by response bias previously discussed for these types of questions.

Table 216: Free Ridership Sensitivity Analysis – EDOR Commercial

Free Ridership Weighting Scheme	All Measures	CFL	T5 /T8	Other Measures
Current Weighting (Partial FR weight=50%, 25%)	30.3%	20.3%	29.5%	42.2%
Low Weighting (Partial FR weight=25%, 12.5%)	25.6%	12.8%	29.5%	35.4%
High Weighting (Partial FR weight= 75%, 37.5%)	34.9%	27.8%	29.5%	48.9%

NET IMPACTS RESULTS – EDOR COMMERCIAL

The preceding information regarding self-reported free ridership, operating hours, and installation verification is used to adjust the *ex ante* gross impacts to determine the *ex post* net realized impacts for the commercial components of the El Dorado Partnership. The specific adjustments and the effect on net realized impacts for both energy and demand are discussed below.

2004-05 Cumulative kWh Impacts – EDOR Commercial

As discussed in the *General Evaluation Findings* section of this report, the operating hour assumption for the commercial lighting measures is likely higher than the operating hours actually realized for small businesses targeted by this Partnership. (See *Chapter 3* of this report for more discussion on this issue.) To correct for the operating hour issue, we apply an adjustment to the savings for CFLs, T8/T5s, and CFL Fixtures.

The adjustment factors used to determine *ex post* net realized impacts from the *ex ante* gross impacts are shown in Table 217. Free ridership adjustment factors are derived from the survey data discussed in the previous section. We were able to develop separate free ridership adjustments for the CFL and T8/T5 measures. For the others we use the average self-reported free ridership rate derived from the survey data from the El Dorado commercial participants.

Finally, we adjust savings based on the verification rate developed from the on-site audit data. Given the small on-site sample, we use the overall verification rate of 0.96 to adjust for persistence for all measures.

Table 217: *Ex Post* Net Realization Rates for kWh Impacts – EDOR Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Operating Hours Adjustment	Verification	*Ex Post* Net Realization Rate
CFLs	0.80	0.44	0.96	0.34
T5/T8	0.80	0.58	0.96	0.45
Other Measures	0.68	1.00	0.96	0.65

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 217. The largest reductions from the original *ex ante* gross impacts are in the T8/T5 and CFL categories and also comprise the majority of the savings. These savings from the original planning estimates are largely due to the reduced operating hour adjustment based on the on-site verification results.

Note that Table 218 shows the change in the *ex ante* and *ex post* net savings, while Table 217 shows the change from *ex ante* gross impacts to *ex post* net impacts. For example, with the T8/T5 measure group the *ex post* net impacts are 34 percent of *ex ante* gross impacts (as shown in Table 217), or a reduction of 66 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is slightly less at a 65 percent reduction (as shown in Table 218).

Table 218: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – EDOR Commercial

Measure	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	1,809,091.0	1,736,727.3	611,328.0	-64.8%
T5/T8	123,273.5	118,342.5	48,047.1	-59.4%
Thermostats	1,129,668.0	1,084,481.3	628,999.1	-42.0%
Exit Signs	289,169.3	277,602.5	161,009.5	-42.0%
Other Lighting	24,391.0	17,073.7	13,580.9	-20.5%
Reflective Window Film	102,933.1	98,815.7	57,313.1	-42.0%
Reflectors/ Delamping	277,461.2	266,362.8	108,143.3	-59.4%
Sensors	227,201.9	208,795.6	126,506.0	-39.4%
Total	3,983,188.9	3,808,201.6	1,754,927.0	-53.9%

2004-05 Cumulative kW Impacts – EDOR Commercial

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 219. As with the kWh impacts, the kW impacts are adjusted to account for verification, free ridership, and the *ex post* net realization rate is the product of the adjustment factors shown in the table.

Table 219: *Ex Post* Net Realization Rates for kW Impacts – EDOR Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.80	0.96	0.77
T5/T8	0.80	0.96	0.77
All Other Measures	0.68	0.96	0.65

The same issues relating to uncertainty discussed with the kWh impacts also apply to the *ex post* kW impacts. For example, there is uncertainty regarding the survey responses used for the self-reported free ridership due to the weighting scheme and the potential for response bias with these types of questions.

Table 220 shows the final *ex post* kW impacts for the commercial component using the adjustment factors from Table 219. Net therm impacts are shown in Table 221.

Table 220: Change in *Ex Ante* and *Ex Post* Net kW Impacts – EDOR Commercial

Measure	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	287.1	275.6	220.5	-20.0%
T5/T8	23.2	22.2	15.6	-30.0%
Exit Signs	34.9	33.5	19.4	-42.0%
Other Lighting	2.8	2.0	1.6	-20.5%
Reflective Window Film	13.6	13.0	7.5	-42.0%
Reflectors/ Delamping	49.4	47.5	33.2	-30.0%
Sensors	82.4	79.1	45.9	-42.0%
Total	493.3	472.8	343.7	-27.3%

Table 221: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – EDOR Commercial

Measure	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
Thermostats	302,220.0	290,131.2	168,276.1	-42.0%

The impact table required by the CPUC, showing kWh, kW, and therm savings over time (commercial and residential combined) and taking into account the expected useful life for each measure, is included in *Appendix A*.

The following tables show the net kWh, kW, and therm impacts for each of the program components (both residential and commercial programs) for the El Dorado Partnership.

Table 222: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – EDOR Programs

Program	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
EDOR – Multi-Family (Direct Install)	526,760.6	468,816.9	430,617.4	-8.1%
EDOR – Single-Family (Direct Install)	245,271.7	218,291.8	202,564.7	-7.2%
EDOR – Small Biz – Good as Gold	3,922,958.9	3,766,040.6	1,721,391.0	-54.3%
EDOR – SPC	60,230.0	42,161.0	33,536.1	-20.5%
Total	4,755,221.2	4,495,310.3	2,388,109.1	-46.9%

Table 223: Change in *Ex Ante* and *Ex Post* Net kW Impacts – EDOR Programs

Program	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
EDOR – Multi-Family (Direct Install)	105.2	93.7	90.3	-3.5%
EDOR – Single-Family (Direct Install)	116.6	103.7	102.6	-1.0%
EDOR – Small Biz – Good as Gold	490.5	470.9	342.1	-27.3%
EDOR – SPC	2.8	2.0	1.6	-20.5%
Total	715.1	670.2	536.7	-19.9%

Table 224: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – EDOR Programs

Program	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
EDOR – Multi-Family (Direct Install)	11,070.0	9,852.3	9,963.0	1.1%
EDOR – Single-Family (Direct Install)	16,470.0	14,658.3	14,823.0	1.1%
EDOR – Small Biz – Good as Gold	302,220.0	290,131.2	168,276.1	-42.0%
Total	329,760.0	314,641.8	193,062.1	-38.6%

CONCLUSIONS AND RECOMMENDATIONS

From the analysis presented above, the following conclusions are drawn for the East Bay Partnership:

- **Reporting requirements must include contact information.** As discussed below, Partnerships are not required to submit participant contact information. This has made phone surveys and on-site verification difficult as we can only contact a portion of the customers for each Partnership.

- **Participant satisfaction is high.** For all the Partnerships, customers we surveyed were generally pleased with their program experience and gave high satisfaction ratings to the program overall and to individual program elements discussed during the phone survey.

- **The Partnership has been generally successful in reaching its target customer groups.** As shown in the survey results, the Partnership has been successful in reaching a significant amount of renters, low-income households, small businesses and non-English customer groups. These findings help support the program theory that the current program design is an effective way to recruit these traditionally hard-to-reach customer groups.

- **Both PG&E and local government sponsorship are considered important.** Participants overwhelming agreed that PG&E and local government sponsorship was important. For residential participants, 79 percent rated PG&E sponsorship as "Very Important," while 68 percent gave the same rating to local government sponsorship. Similarly, 71 percent of the commercial participants gave a "Very Important" rating to PG&E sponsorship and 52 percent gave the same rating to local government involvement.

- **Renters may have more influence over building energy decisions than originally assumed.** While many of the participants rent their homes or businesses, they still have a high level of control over the equipment decisions at the facility. A substantial share of renters (42 percent residential, 61 percent commercial) strongly disagreed with the statement that it was not worth investing in energy efficiency because they did not own the building. Most of the commercial renters also indicated that they did not need to get the building owner's consent prior to making improvements to the building.

- **Participants still have very low awareness of other energy efficiency programs.** The vast majority of participants are unaware of other energy efficiency programs. Of those that are aware, very few recalled having programs recommended to them by the Partnership staff they interacted with. This indicates that Partnership efforts to funnel participants to other programs have had little or no effect.

- **Self-reported free ridership rates are slightly higher than rates currently used**. The survey questions used to estimate free ridership typically resulted in values that were higher than what is currently assumed for these programs.

Based on these conclusions, we offer the following recommendations for the East Bay Partnership:

- **Continue with the current program implementation method.** The process evaluation showed that the key elements of the program theory were supported through the existing program delivery method. Customer satisfaction is also high for all program elements. As long as this can be maintained and net savings are achieved, we see no reason why the current program design should be modified except as indicated in the other evaluation recommendations presented in this report.

- **Commercial operating hour assumptions need to be revised for T8/T5s and CFLs.** The current assumptions for annual operating hours are much higher than those found in comparable studies using on-site audit data and logger data for similar small business customers. Correcting for the operating hours substantially lowers the net *ex post* kWh and kW impacts for these measures in the commercial sector.

- **A separate study should be conducted to revise the operating hour assumptions used in the DEER database for small businesses.** A review of the DEER database revealed that in general the operating hours assigned for small businesses for T8/T5s and CFLs are higher than what has been observed for small business customers in this and other evaluation studies. However, the DEER database also delineates operating hours by business type and there is significant variation in operating hours across business categories. There was not a large enough sample of on-sites in this evaluation to produce separate operating hour estimates for each of the business types currently supported in the DEER database. We recommend a separate study be conducted to address this issue, as it appears that the current operating hour assumptions are generally too high for small business customers for T8/T5s and CFLs.

- **Require that full contact information be required for program tracking.** Currently, PG&E does not require that full contact information be reported for its Partnership, which hampered the evaluation effort and led to a more costly survey effort than originally planned. We strongly recommend that complete contact information (contact name, address, phone number) become a reporting requirement for each Partnership.

- **Improve program referral methods.** If referral to other efficiency programs is to remain a criterion for this Partnership, then the referral methods need to be improved. Possibilities for increasing program awareness include leaving program informational materials with customers, providing a checklist of other measures that could be replaced and matched with a list of related efficiency programs, and follow-up phone calls from other programs to recruit these customers for additional measure installations.

- **Require that program contractors install measures rather than leave them for the customers to install.** A large number of the commercial customers reported that the contractors did not install the equipment but rather left them for the participant to install. Measure retention will increase if contractors complete the installation while on-site.

9. SILICON VALLEY PARTNERSHIP

PROGRAM BACKGROUND

The following program description is based on our review of the Program Implementation Plan, staff interviews, and reviews of the monthly reports.

The Silicon Valley Energy Partnership (SVEP) Program was formed by PG&E and the City of San José (City), and collaborated with other cities and municipalities within the South Bay/Silicon Valley. Through a variety of program elements, the Partnership provided targeted energy information, audit, design and implementation services to participating local governments, businesses, and community organizations. Marketing tools that were used to promote the programs include: program brochures, PG&E and City website updates, PEC training notices in San Jose Chamber of Commerce newsletters, class promotions at the Green Buildings Fair and Santa Clara Home and Garden Show, participation in Holiday (LED) Lighting Events, and distributing energy efficiency information to other environmental improvement programs (e.g., pollution prevention, water technology, green building, and recycling).

Specific programs within the SVEP are summarized below.

Energy Efficient Educational Classes:

This program element built upon the existing partnership between PG&E's PEC and the City's Green Building program to conduct approximately 50 courses. PG&E and the City worked together to develop workshop content, recruit speakers, conduct marketing and implementation activities, and implement the courses.

Codes and Standards for Energy Efficiency

In August 2003, the California Energy Commission released the Public Interest Energy Strategies Report in support of the 2003 Integrated Energy Policy. The Partnership did meet with officials at each of the SVEP partner cities to discuss barriers to changing building codes. However, due in part to the late start of this Partnership as well as concerns by city staff regarding the recent Title 24 changes, no other activity was accomplished relating to codes and standards.

Targeted Savings By Design (SBD)

The SVEP program provided internal training to City staff on the SBD program so that staff could became aware of the SBD program as a resource for new municipal building projects and refer external inquiries to the SBD program. This eventually resulted in some municipal building projects participating in the SBD program.

The POWER PLAYERS Rebate Program for Small Businesses

The POWER PLAYERS Rebate Program provided small businesses (and some churches) with cash rebates to defray the costs of upgrading lights, air conditioners and heat pumps with energy-efficient models. The POWER PLAYERS program leveraged PG&E's energy audit and Express

Efficiency program infrastructure to conduct audits and process applications and payments. Program staff trained the local contractors that participated in the program, identified the target market, set eligibility criteria and managed daily project activities.

Municipal Building Energy Audits

Through the SVEP, PG&E technical consultants audited energy-consuming systems at 25 municipal buildings to identify ways to save energy and taxpayer dollars.

SURVEY RESULTS – SILICON VALLEY (SVEP) COMMERCIAL

The Silicon Valley Partnership has only a commercial component and 161 participants were surveyed as part of this evaluation. Key findings from the survey are presented below.

Firmographic Summary

As shown in Table 225, of the 161 commercial respondents, 77 percent rent their business facility and 21 percent own their facility. This shows that the program has been very successful in reaching the rental market within the commercial sector.

Table 225: Business Ownership – SVEP Commercial

Response (n = 161)	% Of Respondents
Rent	77%
Own	21%
Refused/Don't know	2%

RENT5: Does your business own, lease or rent the facility?

Table 226 shows that 82 percent of the businesses surveyed have 10 or fewer employees, and 68 percent have 5 or fewer employees.

Table 226: Number of Employees – SVEP Commercial

Response (n = 161)	% Of Respondents
1 to 5	68%
6 to 10	14%
11 to 20	7%
21 to 50	3%
51 to 100	1%
Greater than 100	0%
Refused/Don't Know	7%

FIRM5: Which of the following categories describes the number of employees your firm has at this address?

Partnership Awareness and Participant Motivations

Commercial respondents were asked to indicate how they first became aware of the Partnership program, and the results are shown in Table 227. The largest group of respondents (45 percent) learned of the program from the technician that provided the equipment. The next most likely source of program information was through personal contacts.

Table 227: Source of Program Awareness – SVEP Commercial

Response (n = 161)	% Of Respondents
From technician that installed/provided the equipment	45%
Other	33%
Other business, word of mouth, friend, or relative	11%
Refused/Don't know	5%
Local news, radio, or newspaper	2%
Mail	2%
Local government	1%
Found independently	1%
School, church, or community organization	1%

A25: How did you first become aware of the program?

The most commonly cited reasons for participating in the program were to save money on electric bills (76 percent) and to receive free equipment (27 percent). Table 228 shows in more detail a summary of the responses (respondents were allowed to provide multiple responses).

Table 228: Reasons for Participation – SVEP Commercial

Response (n = 161)	% Of Respondents
Saving money on electric bills	76%
To receive free equipment	27%
Other	25%
Energy crisis	17%
Replacing old or broken equipment	8%
Helping protect the environment	6%
Acquiring the latest technology	4%
Recommended by contractor	3%

A28: Why did your company participate in the program?

As shown in Table 229, most of the commercial participants considered both utility and local government sponsorship to be important. When asked about local government sponsorship, 67 percent indicated that it was "Very important" for their participation decision, while 80 percent said that PG&E sponsorship was "Very important."

Table 229: Importance Of Government Sponsorship - SVEP Commercial

Response (n = 161)	Local Government	PG&E
Very important	67%	80%
Somewhat important	17%	15%
Not at all important	11%	2%
Refused/Don't know	5%	3%

SPON1: In deciding to participate in the [PARTNERSHIP_NAME] program, how important was it to you that [LOCAL_GOVERNMENT] sponsored the program? Would you say it was…

SPON3: How important was it to you that PG&E sponsored the program? Would you say it was. . .

Table 230 shows the responses to a series of attitudinal questions regarding potential barriers to installing energy efficient equipment (a score of 10 = "Agree Completely," 1 = "Disagree Completely"). In the following discussion, ratings of 8 or higher were considered as "strongly agree" while ratings of 3 or less are interpreted as "strongly disagree."

When asked if they were concerned bill savings will be less than what was estimated, 29 percent agreed (rated 8 or above) while 24 percent disagreed (rated 3 or below). This question had the highest level of general agreement among all respondents, with an average rating of 5.7.

Twenty-seven percent of the respondents agreed that they did not have the information needed to make informed decisions about energy efficiency investments, while 29 percent felt that they were fairly well informed (the average score was 5.5). There was less concern about perceived "hassles" in selecting a qualified contractor, with 33 percent disagreeing that there is too much hassle compared to 26 percent who agree.

The respondents were generally neutral regarding the availability of financing to make energy efficient investments (the average score was 5.4). Thirty-four percent agreed that insufficient financing can be a barrier to investment, compared with 29 percent who disagreed.

Finally, commercial respondents were generally supportive of investing in energy efficient equipment for a rented or leased space. For the last three statements in Table 230, only the responses of business renters are shown. Among renters, 58 percent of the respondents strongly disagreed with the statement that they would be leaving the building in the near future. Forty-nine percent of renters also strongly disagreed with the statement that it isn't worthwhile to make energy efficient investments in someone else's building. This contradicts the commonly held belief that small commercial customers are resistant to making investments in energy efficient equipment when they do not own their building.

Table 230: Respondent Beliefs About Energy Efficient Products – SVEP Commercial

Rating Scale: 1 = Disagree Completely, 10 = Agree Completely	1%	2%	3%	4%	5%	6%	7%	8%	9%	10 %	R/DK %	N=	Average
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	16	2	6	2	17	5	10	11	0	18	13	161	5.7
I don't have the information I need to make an informed decision about energy efficient investments.	22	3	4	1	17	6	9	7	2	18	10	161	5.5
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	24	4	5	3	12	5	6	7	2	17	15	161	5.1
Lack of financing is a barrier to our organization making energy efficiency investments that we want to make.	23	3	3	1	13	6	6	11	4	16	15	161	5.4
Getting a utility rebate is too much hassle.	30	5	4	1	14	2	7	4	1	17	15	161	4.7
The space in rented and I need the owner's consent to make improvements.*	23	4	4	1	9	3	9	9	1	29	8	124	5.9
I'm not at this location for long.*	52	5	1	2	5	2	4	8	2	7	11	124	3.3
It's not worth investing because it's not my building.*	42	5	2	5	9	3	3	4	2	12	12	124	3.9

PE35A-H: How well do each of the following statements describe your beliefs about energy efficiency investments?

* Results are shown for renters only.

Table 231 shows the degree to which commercial survey respondents recalled referrals to other energy conservation programs by the Silicon Valley Partnership staff. Most respondents (87 percent) were unaware of any other energy efficiency program. Of the remainder that were aware, only a fraction (1 percent of all respondents) recalled being referred to other programs by Partnership staff. Thus, respondents are generally not retaining any information received about other programs and participants remain generally unaware of other program opportunities.

Table 231: LGP Referrals To Other Energy Efficiency Programs - SVEP Commercial

Response (n = 161)	% Of Respondents
Not aware of other programs	87%
Yes, referred by Partnership	1%
No, not referred by Partnership	9%
Don't Know	1%

A30: Besides the program, are you aware of other programs that are designed to promote energy efficiency?

A32: Did anyone from the [PARTNERSHIP_NAME] program recommend that you participate in any other energy conservation program?

Measure Installation Verification

Table 232 shows that among the commercial customers surveyed, the vast majority (93 percent) had the equipment installed by the program rather than dropped off. This high rate of partner installed measures results in greater confidence that these measures are installed properly and are achieving savings.

Table 232: Equipment Installation Method - SVEP Commercial

Response (n = 161)	% Of Respondents
Yes, program installed equipment	93%
No, equipment dropped off	6%
Don't Know	1%

VER10: Did someone from the program install all of the products, or were they given to you for you to install later?

Table 233 shows the share of respondents that had some of the installed measures removed, either for equipment failure or other reasons. Respondents indicated that 16 percent had removed exit signs, 14 percent had removed T5/T8 lighting, and 11 percent had removed CFL bulbs installed through the program.

Note that Table 233 shows the share of *respondents* with failed or removed measures. The following tables show the results of additional verification questions that address the share of *measures* that are no longer in place. The results that are a function of the share of measures are the ones that are used later in this section to adjust the net impacts for this Partnership.

Table 233: Failure and Removal Rate of Installed Measures – SVEP Commercial

Measure	Failed/Removed	No Problems	R/DK
	%	%	%
CFL Bulb (n = 82)	11%	88%	1%
T5/T8 (n = 150)	14%	83%	3%
Exit Sign (n = 25)	16%	80%	4%
CFL Fixture (n = 0)	0%	0%	0%
Sensor (n = 0)	0%	0%	0%
Thermostat (n = 3)	0%	100%	0%
Other (n = 101)	4%	94%	2%

RET20: Have any of those [M_DESC] installed failed or been removed?

Additional questions were asked to differentiate CFL bulbs that were removed because of failure and those that were removed for non-failure reasons (e.g., a remodeling required the removal, the equipment was upgraded, light too bright or dim). The vast majority of CFL bulbs that were removed were removed because they failed during or after installation. Only one respondent removed CFL lamps for non-failure reasons (they burned out) and the lamps were not replaced.

Table 234 below shows the results for both the phone survey verification and the on-site visit verification. The first column in each section shows how many sites had each of the measures listed. The second column displays the quantity of measures as it was reported in the PG&E tracking database. The third column shows the quantity of each measure that could be verified either by the verifier on-site, or by the respondent over the phone. The percentage shown in the fourth column shows the percent verified of the sites visited or interviewed. If a percentage is greater than 100 percent, additional measures were found installed that were not included in the PG&E tracking data for this program. It is unclear if this is due to errors in coding of these measures in the system or if these measures were installed through other programs.

Of the 11 sites visited during the on-sites, 95 percent of the CFLs, Thermostats, and T5/T8s were confirmed as installed. On the measure level, there were consistently close to 100% for each measure.

Table 234: Phone and On-site Visit Verification – SVEP Commercial

	On-site Visit				Phone Survey			
	Equipment Reported		Equipment Verified		Equipment Reported		Equipment Verified	
Measures	Sites	Quantity	Quantity	Percent	Sites	Quantity	Quantity	Percent
CFLs	5	19	20	105%	95	2,545	1,085	43%
CFL Fixtures	0	0	0		0	0	0	
Thermostats	1	1	1	100%	3	3	3	100%
T5/T8s	10	567	537	95%	152	10,549	10,219	97%
Total	11	587	558	95%	161	13,097	11,307	86%

The initial plan for the evaluation was to analyze the on-site and phone verification results and create an adjustment using data from both sources. The phone survey results, however, differed substantially from the on-site results across the various Partnerships. In some cases the phone verification rate was greater than the on-site rate while in other cases the phone verification rate was less than the on-site rate. These differences occurred across both Partnerships and measures. Due to this wide variability, we did not use the phone survey data for the verification rates and relied only on the on-site data as we believe that the on-site data are more accurate for verification purposes.

Verification adjustment factors for use in the net impact analysis were developed using the following method. For those measures that were found at more than 10 sites, the measure-specific verification rate is used. For those measures that had a sample of 10 sites or less, the overall average on-site verification rate was applied for that Partnership. While 10 sites is still a relatively small sample, we believe that the benefits of using a measure-specific adjustment factor outweigh the uncertainty of the small sample. Finally, if the verification rate was greater than 100 percent, it was capped at 100 percent as it was not possible to determine if the additional measures were installed through the Partnership program, some other efficiency program, or purchased by the participant outside any efficiency program. Therefore, to be conservative the verification rate is capped at 100 percent. The resulting verification rate is used to adjust impacts at the measure level as part of the net realized impacts calculations discussed at the end of this section.

Participant Satisfaction with Program

Table 235 shows the commercial customer satisfaction with various aspects of the Silicon Valley Partnership. For the most part, participants were satisfied with their overall program experience, with an average satisfaction rating of 8.4 (on a 10-point scale), and 78 percent providing a satisfaction rating of 8 or higher. The installation and audit processes received average scores of 8.0 and 8.4 respectively. Similarly, interaction with program staff received an overall rating of 8.1, suggesting that respondents were generally pleased with the personal interface aspects of the program.

Information about the program received the lowest average satisfaction rating of 7.6. While not many respondents were dissatisfied with the information provided (5 percent with a rating of 3 or lower), a relatively large number of respondents (14 percent) gave only a neutral rating of 5.

Satisfaction with bill savings received the second lowest rating, with an average rating of 7.8. Fifty-one percent of respondents gave bill savings a satisfaction rating of 8 or higher, with 33 percent giving a rating of 10. Six percent of respondents, however, were completely dissatisfied with their bill savings, the highest level of dissatisfaction recorded for the various program elements. Compared to the other questions, there was a larger percentage of respondents in the Refused/Don't Know category, which means they likely do not know if they have saved money on their bills.

Table 235: Respondent Satisfaction With Program - SVEP Commercial

Rating: 1 = Extremely Dissatisfied, 10 = Extremely Satisfied	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	R/DK/NA %	n =	Average
Overall satisfaction with the program experience	2	2	1	1	6	2	7	21	11	45	3	161	8.4
Information provided about the program	4	0	1	2	14	6	12	16	6	35	5	161	7.6
Interaction with program staff	4	1	1	1	6	4	12	17	10	37	8	161	8.1
Bill savings	6	1	0	1	8	3	4	15	3	33	26	161	7.8
Audit Process	2	0	1	1	1	6	7	15	11	35	21	161	8.4
Installation process	5	1	2	1	5	4	7	17	9	41	5	161	8.0

SAT2-30. On a scale of 1 to 10 where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Table 236 shows that 73 percent of all respondents are more likely to make future energy efficiency improvements after participating in the program. In separate survey questions, 72 percent of respondents that installed CFL lighting said they plan to continue using CFLs as their existing lights burn out or fail, and among this group, 55 percent indicated that the program was very influential in their decision to use CFLs in the future.

Table 236: Future Energy Efficient Installations – SVEP Commercial

Response (n = 161)	% Of Respondents
More likely	73%
Less likely	6%
Same	15%
Refused/Don't Know	6%

PE11: Are you more or less likely to install energy-efficiency products as a result of your experience with this program?

Self-Reported Free Ridership

Table 237 shows the responses to two separate questions regarding what would have been done in the absence of the program. The first question asks respondents directly what they would have done in the absence of the program. The second question was asked separately to determine which respondents were considering installing energy efficiency equipment prior to learning about the Partnership. In developing a free ridership estimate, we assigned full and partial free ridership rates as follows:

- Those that claim they would have purchased the same equipment at the same time, and were already considering installing the equipment are full free riders.
- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment before they learned about the program are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, and were already considering installing the equipment are partial free riders, at 50 percent.
- Those that claim they would have purchased the same equipment at a later time, but were not considering installing the equipment before they learned about the program are partial free riders, at 25 percent.
- Those that claim they would have not have purchased equipment, or would have purchased standard equipment are net participants (no free ridership).

For the commercial measures in the Silicon Valley Partnership, the self-reported free ridership rate is 13.0 percent for commercial measures. This is higher then the free ridership rate currently used for the Silicon Valley Partnership. The assumed net-to-gross ratio is 0.96, which implies a free ridership rate of around 4 percent.

Table 237: Self-Reported Free Ridership - SVEP Commercial

What type of equipment would you have purchased had the rebate not existed?	Before you learned about the program, were you already considering purchasing the measure?	Measures	Quantity Weighted Percent	Contribution to Free Ridership
None	Yes	194	1.2%	0.0%
	No	7,035	42.3%	0.0%
Standard Equipment	Yes	830	5.0%	0.0%
	No	4,870	29.3%	0.0%
Same Energy Efficient Equipment, Later	Yes	1,444	8.7%	4.3%
	No	1,100	606%	1.7%
Same Energy Efficient Equipment, Now or Earlier	Yes	1,047	6.3%	6.3%
	No	107	0.6%	0.3%
Total		**16,627**	**100.0%**	**12.6%**

For the self-reported free ridership estimates, the results are sensitive to the weights applied to the partial free ridership responses. We have used a weight of 50 percent for partial free riders and 25 percent for partial free riders that were not considering purchasing equipment prior to speaking with a technician about the Partnership. Any such weighting scheme is somewhat arbitrary; these weights were chosen as they are generally consistent with other evaluation studies (such as Express Efficiency) and seemed to be reasonable assumptions for this program.

To test how sensitive the results are to the partial free ridership weighting assumptions, we also calculated free ridership rates using a lower weight for partial free riders. This weighting scheme applies a 50 percent reduction to the weights already assigned (25 percent for partial free riders and 12.5 percent for those that were not considering purchasing equipment prior to participating in the Partnership). With these lower rates, the estimated free ridership for CFLs falls from 9 percent to 7 percent. Similarly, for T5/T8s the rate falls from 15 percent to 12 percent.

A similar sensitivity test was done by increasing the weights 50 percent for partial free riders. To calculate a higher bound for the estimate, a weight of 75 percent was used for partial free riders and 37.5 percent for partial free riders that were not considering purchasing equipment prior to learning about the program. With this weighting increase, the estimated free ridership rate for CFLs increases from 9 percent to 10 percent. For T5/T8s, the free ridership rate increases from 15 percent to 18 percent.

The sensitivity analysis just discussed is summarized in Table 238. Although the weight ranges used for the sensitivity analysis are also arbitrarily chosen, they do provide useful information on how much the free ridership rates might vary under alternative assumptions. Note that these results do not account for any additional error that may be introduced by response bias previously discussed for these types of questions.

Table 238: Free Ridership Sensitivity Analysis – SVEP Commercial

Free Ridership Weighting Scheme	All Measures	CFL	T5/T8	Other Measures
Current Weighting (Partial FR weight=50%, 25%)	12.6%	8.5%	14.9%	10.4%
Low Weighting (Partial FR weight=25%, 12.5%)	9.5%	7.1%	12.2%	5.6%
High Weighting (Partial FR weight= 75%, 37.5%)	15.8%	9.8%	17.7%	15.2%

NET IMPACT RESULTS – SVEP COMMERCIAL

The preceding information regarding self-reported free ridership, operating hours, and installation verification is used to adjust the *ex ante* gross impacts to determine the *ex post* net realized impacts for the Silicon Valley Partnership. The specific adjustments and the effect on net realized impacts for both energy and demand are discussed below.

2004-05 Cumulative kWh Impacts – SVEP Commercial

As discussed in the *General Evaluation Findings* section of this report, the operating hour assumption for the commercial lighting measures is likely higher than the operating hours actually realized for small businesses targeted by this Partnership. (See *Chapter 3* of this report for more discussion on this issue.) To correct for the operating hour issue, we apply an adjustment to the savings for CFLs, T8/T5s, and CFL Fixtures.

The adjustment factors used to determine *ex post* net realized impacts from the *ex ante* gross impacts are shown in Table 239. Free ridership adjustment factors are derived from the survey data discussed in the previous section. We were able to develop separate free ridership adjustments for the CFL and T8/T5 measures. For the others we use the average self-reported free ridership rate derived from the survey data from the Silicon Valley Partnership participants.

Finally, we adjust savings based on the verification rate developed from the on-site audit data. Given the small on-site sample, we use the overall verification rate of 0.95 to adjust for persistence for all measures.

Table 239: *Ex Post* Net Realization Rates for kWh Impacts – SVEP Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Operating Hours Adjustment	Verification	*Ex Post* Net Realization Rate
CFLs	0.91	0.44	0.95	0.38
T5/T8	0.85	0.58	0.95	0.47
Other Measures	0.90	1.0	0.95	0.86

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 240. The largest reductions from the original *ex ante* gross impacts are in the T8/T5 and CFL categories and also comprise the majority of the savings. These savings from the original planning estimates are largely due to the reduced operating hour adjustment based on the on-site verification results.

Note that Table 240 shows the change in the *ex ante* and *ex post* net savings, while the previous table shows the change from *ex ante* gross impacts to *ex post* net impacts. For example, with the T8/T5 measure group the *ex post* net impacts are 47 percent of *ex ante* gross impacts (as shown in Table 239), or a reduction of 53 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is slightly less at a 51 percent reduction (as shown in Table 240).

Table 240: Change in *Ex Ante* and *Ex Post* Net kWh Impacts – SVEP Commercial

Measure	PG&E Gross Savings (kWh)	PG&E Net Savings (kWh)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	1,523,664.9	1,462,718.3	579,571.7	-60.4%
T5/T8	2,070,978.7	1,988,139.5	969,942.9	-51.2%
Thermostats	167,813.0	161,100.5	143,480.1	-10.9%
Exit Signs	101,894.4	97,818.6	87,119.7	-10.9%
Reflectors/ Delamping	3,469,025.4	3,330,264.4	1,624,718.1	-51.2%
Sensors	2,655.3	2,549.1	2,270.3	-10.9%
Total	7,336,031.7	7,042,590.4	3,407,102.7	-51.6%

2004-05 Cumulative kW Impacts – SVEP Commercial

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 241. As with the kWh impacts, the kW impacts are adjusted to account for verification, free ridership, and the *ex post* net realization rate is the product of the adjustment factors shown in the table.

Table 241: *Ex Post* Net Realization Rates for kW Impacts – SVEP Commercial

Measure	Self-Reported Free Ridership Adjustment (1-FR)	Verification	*Ex Post* Net Realization Rate
CFLs	0.91	0.95	0.86
T5/T8	0.85	0.95	0.81
All Other Measures	0.90	0.95	0.86

The same issues relating to uncertainty discussed with the kWh impacts also apply to the *ex post* kW impacts. For example, there is uncertainty regarding the survey responses used for the self-reported free ridership due to the weighting scheme and the potential for response bias with these types of questions.

Table 242 shows the final *ex post* kW impacts for the commercial component using the adjustment factors from Table 241. Net therm impacts are also provided in Table 243.

Table 242: Change in *Ex Ante* and *Ex Post* Net kW Impacts – SVEP Commercial

Measure	PG&E Gross Savings (kW)	PG&E Net Savings (kW)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
CFLs	240.6	231.0	208.0	-9.9%
T5/T8	395.4	379.6	319.3	-15.9%
Exit Signs	12.3	11.8	10.5	-10.9%
Reflectors/ Delamping	664.4	637.8	536.5	-15.9%
Sensors	1.1	1.1	1.0	-10.9%
Total	1,313.8	1,261.3	1,075.2	-14.7%

Table 243: Change in *Ex Ante* and *Ex Post* Net Therm Impacts – SVEP Commercial

Measure	PG&E Gross Savings (thm)	PG&E Net Savings (thm)	Evaluation Net Savings	Difference Between Evaluation and PG&E Net Savings (%)
Thermostats	44,895.0	43,099.2	38,385.2	-10.9%

The impact table required by the CPUC, showing kWh, kW, and therm savings over time (commercial and residential combined) and taking into account the expected useful life for each measure, is included in *Appendix A*.

CONCLUSIONS AND RECOMMENDATIONS

From the analysis presented above, the following conclusions are drawn for the Silicon Valley Partnership:

- **Reporting requirements must include contact information.** As discussed below, Partnerships are not required to submit participant contact information. This has made phone surveys and on-site verification difficult as we can only contact a portion of the customers for each Partnership. For Silicon Valley, this issue is compounded by the fact that the customer contact information becomes public, as it is the City of San Jose (rather than a private contractor) that implements the program. One possible solution here is to have the customers sign a release form so their contact information can be reported to PG&E and otherwise be publicly available.

- **Participant satisfaction is high.** For all the Partnerships, customers we surveyed were generally pleased with their program experience and gave high satisfaction ratings to the program overall and to individual program elements discussed during the phone survey.

- **The Partnership has been generally successful in reaching its target customer groups.** As shown in the survey results, the Partnership has been successful in reaching a significant amount of renters, small businesses, and non-English customer groups. These findings help support the program theory that the current program design is an effective way to recruit these hard-to-reach commercial customers.

- **Both PG&E and local government sponsorship are considered important.** Participants overwhelmingly agreed that PG&E and local government sponsorship was important. For commercial participants, 80 percent rated PG&E sponsorship as "Very Important," while 67 percent gave the same rating to local government sponsorship.

- **Renters may have more influence over building energy decisions than originally assumed.** While many of the participants rent their businesses, they still have a high level of control over the equipment decisions at the facility. Almost half of renters (49 percent commercial) strongly disagreed with the statement that it was not worth investing in energy efficiency because they did not own the building.

- **Participants still have very low awareness of other energy efficiency programs.** The vast majority of participants are unaware of other energy efficiency programs. Of those that are aware, very few recalled having programs recommended to them by the Partnership staff they interacted with. This indicates that Partnership efforts to funnel participants to other programs have had little or no effect.

- **Self-reported free ridership rates are slightly higher than rates currently used**. The survey questions used to estimate free ridership typically resulted in values that were higher than what is currently assumed for these programs.

Based on these conclusions, we offer the following recommendations for the Silicon Valley Partnership:

- **Continue with the current program implementation method.** The process evaluation showed that the key elements of the program theory were supported through the existing program delivery method. Customer satisfaction is also high for all program elements. As long as this can be maintained and net savings are achieved, we see no reason why the current program design should be modified except as indicated in the other evaluation recommendations presented in this report.

- **Commercial operating hour assumptions need to be revised for T8/T5s and CFLs.** The current assumptions for annual operating hours are much higher than those found in comparable studies using on-site audit data and logger data for similar small business customers. Correcting for the operating hours substantially lowers the net *ex post* kWh and kW impacts for these measures in the commercial sector.

- **A separate study should be conducted to revise the operating hour assumptions used in the DEER database for small businesses.** A review of the DEER database revealed that in general the operating hours assigned for small businesses for T8/T5s and CFLs are higher than what has been observed for small business customers in this and other evaluation studies. However, the DEER database also delineates operating hours by business type and there is significant variation in operating hours across business categories. There was not a large enough sample of on-sites in this evaluation to produce separate operating hour estimates for each of the business types currently supported in the DEER database. We recommend a separate study be conducted to address this issue, as it appears that the current operating hour assumptions are generally too high for small business customers for T8/T5s and CFLs.

- **Require that full contact information be required for program tracking.** Currently, PG&E does not require that full contact information be reported for its Partnership, which hampered the evaluation effort and led to a more costly survey effort than originally planned. We strongly recommend that complete contact information (contact name, address, phone number) become a reporting requirement for each Partnership.

- **Improve program referral methods.** If referral to other efficiency programs is to remain a criterion for this Partnership, then the referral methods need to be improved. Possibilities for increasing program awareness include leaving program informational materials with customers, providing a checklist of other measures that could be replaced and matched with a list of related efficiency programs, and follow-up phone calls from other programs to recruit these customers for additional measure installations.

APPENDIX A: CPUC IMPACT TABLES

Table A-1: Bakersfield / Kern Energy Watch

Program ID*:	1350-04							
Program Name:	Bakersfield / Kern Energy Watch Partnership							
	Year	Calendar Year	Gross Program-Projected MWh Savings	Net Evaluation Confirmed Program MWh Savings	Gross Program-Projected Peak MW Savings	Evaluation Projected Peak MW Savings**	Gross Program-Projected Therm Savings	Net Evaluation Confirmed Program Therm Savings
	1	2004	3,299	1,992	0.73	0.46	58,496	31,079
	2	2005	7,383	4,717	1.51	0.97	112,259	59,643
	3	2006	7,383	4,717	1.51	0.97	112,259	59,643
	4	2007	7,383	4,717	1.51	0.97	112,259	59,643
	5	2008	7,383	4,254	1.51	0.89	112,259	59,643
	6	2009	7,383	3,338	1.51	0.76	112,259	59,643
	7	2010	7,383	3,041	1.51	0.72	112,259	59,643
	8	2011	7,383	3,041	1.51	0.72	112,259	59,643
	9	2012	6,737	2,984	1.38	0.69	112,259	59,643
	10	2013	5,361	2,973	1.19	0.69	112,259	59,643
	11	2014	4,297	2,973	1.06	0.69	112,259	59,643
	12	2015	4,085	2,860	0.73	0.51	53,763	28,564
	13	2016	3,896	2,760	0.44	0.36	0	0
	14	2017	3,896	2,760	0.44	0.36	0	0
	15	2018	3,896	2,760	0.44	0.36	0	0
	16	2019	3,895	2,760	0.44	0.36	0	0
	17	2020	2,529	1,815	0.30	0.24	0	0
	18	2021	1,182	858	0.16	0.11	0	0
	19	2022	1,182	858	0.16	0.11	0	0
	20	2023	1,182	858	0.16	0.11	0	0
	21	2024	857	633	0.12	0.09	0	0
	TOTAL	**2004-2024**	97,973	57,669	1.51*	0.97*	1,234,848	656,075

* The gross and evaluation projected peak MW savings totals represent the highest single annual MW reduction resulting from program activities.

Table A-2: City of Fresno

Program ID*:	1205-04							
Program Name:	City of Fresno							
	Year	Calendar Year	Gross Program-Projected MWh Savings	Net Evaluation Confirmed Program MWh Savings	Gross Program-Projected Peak MW Savings	Evaluation Projected Peak MW Savings**	Gross Program-Projected Therm Savings	Net Evaluation Confirmed Program Therm Savings
	1	2004	797	395	0.18	0.14	34,855	27,770
	2	2005	7,520	3,479	1.51	1.06	259,644	192,915
	3	2006	7,520	3,479	1.51	1.06	259,644	192,915
	4	2007	7,519	3,478	1.51	1.06	259,644	192,915
	5	2008	7,519	3,371	1.51	1.03	259,644	192,915
	6	2009	7,519	2,725	1.51	0.83	259,644	192,915
	7	2010	7,519	2,479	1.51	0.76	259,644	192,915
	8	2011	7,519	2,479	1.51	0.76	259,644	192,915
	9	2012	7,161	2,479	1.46	0.76	259,644	192,915
	10	2013	3,802	2,047	0.72	0.55	259,644	192,915
	11	2014	3,683	2,045	0.70	0.55	257,376	190,988
	12	2015	3,557	1,945	0.62	0.48	222,000	162,775
	13	2016	2,730	1,338	0.45	0.32	0	0
	14	2017	2,730	1,338	0.45	0.32	0	0
	15	2018	2,730	1,338	0.45	0.32	0	0
	16	2019	2,730	1,338	0.45	0.32	0	0
	17	2020	2,523	1,239	0.42	0.29	0	0
	18	2021	370	251	0.04	0.03	0	0
	19	2022	370	251	0.04	0.03	0	0
	20	2023	370	251	0.04	0.03	0	0
	21	2024	302	205	0.04	0.02	0	0
	TOTAL	**2004-2024**	86,493	37,954	1.51*	1.06*	2,851,026	2,117,771

* The gross and evaluation projected peak MW savings totals represent the highest single annual MW reduction resulting from program activities.

Table A-3: City of Stockton

Program ID*:	1215-04							
Program Name:	City of Stockton							
	Year	Calendar Year	Gross Program-Projected MWh Savings	Net Evaluation Confirmed Program MWh Savings	Gross Program-Projected Peak MW Savings	Evaluation Projected Peak MW Savings**	Gross Program-Projected Therm Savings	Net Evaluation Confirmed Program Therm Savings
	1	2004	2,694	1,261	0.43	0.34	10,283	8,269
	2	2005	5,327	2,995	0.91	0.71	107,708	87,153
	3	2006	5,327	2,995	0.91	0.71	107,708	87,153
	4	2007	5,327	2,995	0.91	0.71	107,708	87,153
	5	2008	5,327	2,478	0.91	0.55	107,708	87,153
	6	2009	5,327	1,961	0.91	0.43	107,708	87,153
	7	2010	5,327	1,836	0.91	0.40	107,708	87,153
	8	2011	5,327	1,836	0.91	0.40	107,708	87,153
	9	2012	3,258	1,708	0.57	0.34	107,708	87,153
	10	2013	2,746	1,657	0.47	0.32	107,708	87,153
	11	2014	2,307	1,635	0.42	0.32	107,708	87,153
	12	2015	2,268	1,604	0.40	0.30	97,425	78,884
	13	2016	1,907	1,311	0.22	0.17	0	0
	14	2017	1,907	1,311	0.22	0.17	0	0
	15	2018	1,907	1,311	0.22	0.17	0	0
	16	2019	1,907	1,311	0.22	0.17	0	0
	17	2020	1,457	981	0.17	0.13	0	0
	18	2021	188	137	0.02	0.02	0	0
	19	2022	188	137	0.02	0.02	0	0
	20	2023	188	137	0.02	0.02	0	0
	21	2024	160	117	0.02	0.01	0	0
	TOTAL	**2004-2024**	60,370	31,714	0.91*	0.71*	1,184,783	958,687

* The gross and evaluation projected peak MW savings totals represent the highest single annual MW reduction resulting from program activities.

Table A-4: East Bay Energy Partnership

Program ID*:	1226-04							
Program Name:	East Bay Energy Partnership							
	Year	Calendar Year	Gross Program-Projected MWh Savings	Net Evaluation Confirmed Program MWh Savings	Gross Program-Projected Peak MW Savings	Evaluation Projected Peak MW Savings**	Gross Program-Projected Therm Savings	Net Evaluation Confirmed Program Therm Savings
	1	2004	153	114	0.05	0.04	2,565	1,924
	2	2005	11,421	8,941	2.54	2.08	74,198	60,124
	3	2006	11,421	8,941	2.54	2.08	74,198	60,124
	4	2007	11,421	8,941	2.54	2.08	74,198	60,124
	5	2008	11,204	8,912	2.48	2.07	74,198	60,124
	6	2009	10,774	8,385	2.33	1.91	74,198	60,124
	7	2010	10,058	7,730	2.27	1.84	74,198	60,124
	8	2011	10,058	7,730	2.27	1.84	74,198	60,124
	9	2012	10,058	7,730	2.27	1.84	74,198	60,124
	10	2013	6,235	4,625	1.99	1.61	51,663	41,645
	11	2014	6,132	4,625	1.98	1.61	51,663	41,645
	12	2015	6,097	4,597	1.96	1.60	49,098	39,722
	13	2016	5,899	4,436	1.91	1.57	40,978	33,602
	14	2017	5,899	4,436	1.91	1.57	40,978	33,602
	15	2018	5,899	4,436	1.91	1.57	40,978	33,602
	16	2019	5,899	4,436	1.91	1.57	40,978	33,602
	17	2020	4,774	3,878	1.70	1.39	40,978	33,602
	18	2021	243	164	0.03	0.02	0	0
	19	2022	243	164	0.03	0.02	0	0
	20	2023	243	164	0.03	0.02	0	0
	21	2024	197	133	0.02	0.02	0	0
	TOTAL	**2004-2024**	134,328	103,512	2.54*	2.08*	953,461	773,938

* The gross and evaluation projected peak MW savings totals represent the highest single annual MW reduction resulting from program activities.

Table A-5: El Dorado County

Program ID*:	1214-04							
Program Name:	El Dorado County							
	Year	Calendar Year	Gross Program-Projected MWh Savings	Net Evaluation Confirmed Program MWh Savings	Gross Program-Projected Peak MW Savings	Evaluation Projected Peak MW Savings**	Gross Program-Projected Therm Savings	Net Evaluation Confirmed Program Therm Savings
	1	2004	4,092	1,862	0.58	0.42	314,910	179,697
	2	2005	4,755	2,388	0.72	0.54	329,760	193,062
	3	2006	4,755	2,388	0.72	0.54	329,760	193,062
	4	2007	4,755	2,388	0.72	0.54	329,760	193,062
	5	2008	4,755	1,928	0.72	0.38	329,760	193,062
	6	2009	4,755	1,647	0.72	0.30	329,760	193,062
	7	2010	4,755	1,609	0.72	0.30	329,760	193,062
	8	2011	4,755	1,609	0.72	0.30	329,760	193,062
	9	2012	2,755	1,503	0.35	0.25	329,760	193,062
	10	2013	2,705	1,503	0.34	0.25	329,760	193,062
	11	2014	2,426	1,445	0.30	0.24	329,760	193,062
	12	2015	1,249	775	0.23	0.18	14,850	13,365
	13	2016	1,195	726	0.15	0.10	0	0
	14	2017	1,195	726	0.15	0.10	0	0
	15	2018	1,195	726	0.15	0.10	0	0
	16	2019	1,195	726	0.15	0.10	0	0
	17	2020	499	404	0.04	0.03	0	0
	18	2021	111	93	0.01	0.01	0	0
	19	2022	111	93	0.01	0.01	0	0
	20	2023	111	93	0.01	0.01	0	0
	21	2024	43	37	0.01	0.00	0	0
	TOTAL	**2004-2024**	52,168	24,668	0.72*	0.54*	3,627,360	2,123,683

* The gross and evaluation projected peak MW savings totals represent the highest single annual MW reduction resulting from program activities.

Table A-6: Silicon Valley Energy Partnership

Program ID*:	1207-04							
Program Name:	Silicon Valley Energy Partnership							
	Year	Calendar Year	Gross Program-Projected MWh Savings	Net Evaluation Confirmed Program MWh Savings	Gross Program-Projected Peak MW Savings	Evaluation Projected Peak MW Savings**	Gross Program-Projected Therm Savings	Net Evaluation Confirmed Program Therm Savings
	1	2004	7,336	3,407	1.31	1.08	44,895	38,385
	2	2005	7,336	3,407	1.31	1.08	44,895	38,385
	3	2006	7,336	3,407	1.31	1.08	44,895	38,385
	4	2007	7,336	3,407	1.31	1.08	44,895	38,385
	5	2008	7,336	2,996	1.31	0.93	44,895	38,385
	6	2009	7,336	2,828	1.31	0.87	44,895	38,385
	7	2010	7,336	2,828	1.31	0.87	44,895	38,385
	8	2011	7,336	2,828	1.31	0.87	44,895	38,385
	9	2012	5,810	2,825	1.07	0.87	44,895	38,385
	10	2013	5,810	2,825	1.07	0.87	44,895	38,385
	11	2014	5,810	2,825	1.07	0.87	44,895	38,385
	12	2015	5,642	2,682	1.07	0.87	0	0
	13	2016	5,642	2,682	1.07	0.87	0	0
	14	2017	5,642	2,682	1.07	0.87	0	0
	15	2018	5,642	2,682	1.07	0.87	0	0
	16	2019	5,642	2,682	1.07	0.87	0	0
	17	2020	0	0	0.00	0.00	0	0
	18	2021	0	0	0.00	0.00	0	0
	19	2022	0	0	0.00	0.00	0	0
	20	2023	0	0	0.00	0.00	0	0
	21	2024	0	0	0.00	0.00	0	0
	TOTAL	**2004-2024**	104,327	46,991	1.31*	1.08*	493,845	422,237

* The gross and evaluation projected peak MW savings totals represent the highest single annual MW reduction resulting from program activities.

APPENDIX B: SURVEY INSTRUMENTS

PG&E PARTNERSHIPS PROGRAM PARTICIPANT SURVEY – Small Commercial

INTRO1**********

Hello, my name is - name - and I am calling from Population Research Systems on behalf of PG&E. May I please speak with [CONTACT_NAME]?

[IF NO PROGRAM CONTACT Name available:]

Hello, my name is – interviewer name – and I am calling from Population Research Systems on behalf of PG&E. May I please speak with the person most knowledgeable about the recent lighting equipment changes for your firm at this location?

INTRO2**********

Earlier this year your company received energy-saving lighting equipment through [PARTNERSHIP_NAME]. We are calling to talk to you about your firm's experiences with this program. Your information will help PG&E to evaluate the effectiveness of this program and to improve services to small business customers like you. This survey will take less than 15 minutes and all your answers will remain confidential.

Are you the person who worked with the [PARTNERSHIP_NAME] contractor or representative?

If yes skip to Screen5

If no – get person on the phone skip to intro 3

INTRO3**********

I was told you are the person most knowledgeable about this lighting installation. Is this correct?

SCREEN5**********

Just to check, did your business participate in an energy efficiency program sponsored by [PARTNERSHIP_NAME] at [SERVICE_ADDRESS]?

[INTERVIEWER NOTE: This is a PG&E program where your business received either a rebate or free equipment for installing one or more energy-efficient products covered under the program.]

1 Yes, participated in program at this location (skip to VER5)
2 Yes, participated in program, but at other location
3 Yes, participated in PG&E program, but don't recall that as the name (skip to VER5)
4 NO, did NOT participate in program
5 NO, did NOT receive rebate or free equipment (but did participate in program)
88 Refused
99 Don't know

SCREEN10**********

Is it possible that someone else at [SERVIVE_ADDRESS] dealt with the installation of energy-efficient equipment, or that the contractor you hired dealt with the rebate paperwork?

1 Someone else dealt with it (schedule CALLBACK)
2 Installed EE measures (but do not recall rebate or program)
3 Applied for program/have not installed EE measures yet
77 Other (SPECIFY) _____
88 Refused
99 Don't know

IF ANS>1 Term2

VER5**********

I would like to confirm some information in PG&E's database. Our records show that you had the following equipment installed through the [PARTNERSHIP_NAME] Program. Can you please verify that for me you received…

(NOTE: Verify measure and measure quantity. Note below any discrepancies in either measure description or measure quantity).

Interviewer: Read the number and the type of measure and enter the number given by respondent. If respondent says 'yes' enter the same number as stated.

Quantity	Measure	Description of Measure	Save number given by respondent as Count1 etc.
M1	MEASURE1	MEAS_DESCRIPTION1	
M2	MEASURE2	MEAS_DESCRIPTION2	
M3	MEASURE3	MEAS_DESCRIPTION3	
M4	MEASURE4	MEAS_DESCRIPTION4	
M5	MEASURE5	MEAS_DESCRIPTION5	
M6	MEASURE6	MEAS_DESCRIPTION6	
M7	MEASURE7	MEAS_DESCRIPTION7	
M8	MEASURE8	MEAS_DESCRIPTION8	

VER10**********

Did someone from the program install all of the measures, or were they dropped off at your business for you to install later?

1 Yes, program installed equipment
2 No, equipment dropped off

88 Refused
99 Don't Know

VER11**********

Did you receive an energy audit prior to having the equipment installed?

1 Yes (skipto VER12)
2 No (skipto VER13)
88 Refused (skipto VER13)
99 Don't Know (skipto VER13)

VER12**********

Did the same person that did the audit also install the equipment?

1 Yes
2 No
88 Refused
99 Don't Know

VER13**********

Did anybody else contact you about this program?

1 Yes
2 No
88 Refused
99 Don't Know

IF (ANS >1) skpto VER15
VER14 **********

What did they discuss with you?

1 Wanted to verify installation
2 Other (specify)_____
88 Refused
99 Don't Know
(insert before VER15!)

IF CFL_FLAG = 0 skpto SAT1

VER15**********

When the CFLs were installed, what kind of lamp did you replace: incandescent or CFLs? (multiple choice)

1 Incandescent
2 CFLs
3 HID
4 Mercury vapor
5 Other (SPECIFY)_____
88 Refused
99 Don't Know

VER16**********

Were all CFLs installed or were some of them placed in storage for later use?

1 All installed
2 Some installed
3 Some in storage
4 All in storage
88 Refused
99 Don't Know

IF VER16 = 1 | 88 | 99 skipto VER20
IF VER16= 2 skipto VER17
IF VER16= 3 or 4 skipto VER18

VER17**********

How many of the CFLs were installed?
_____(get number)
88 Refused
99 Don't Know

VER18**********

Why were not all CFLs installed?

_____(record response)

(NTERVIEWER: If some CFLs were put in storage, ask why?)

VER20A**********

Other than the CFLs, was all of the other equipment installed?
1 Yes

2 No
3 Maybe
88 Refused
99 Don't Know

IF (ANS = 2) skpto VER20B
IF (ANS =1 | ANS > 87) skpto SAT1

VER20B**********

Which equipment you received was not installed?
_____(record response)

VER21**********

Why was the equipment not installed?

1 Already had equipment installed prior to program
2 Did not fit / wrong equipment
3 Did not know how to install
4 Never wanted equipment
5 Do not like the technology
88 Refused
99 Don't know

VER22**********
Do you plan to install the equipment in the future?
1 Yes
2 No
3 Maybe
88 Refused
99 Don't Know

[For the following questions, ask for a MAXIMUM of 3 records – MEASURE1, MEASURE2, MEASURE3)]

SAT1**********
On a scale of 1 to 10, where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, how satisfied have you been with the performance of the <MEASUREn>.

_____ (record number from 1 - 10)
88 Refused
99 Don't Know

If SAT1 < 6 skpto SAT2 else skpto RET20

SAT2**********

Why did you say that?

_____(record open end)

Note to programmer: DISPLAY THE TOTAL COUNTn for that particular measure MEASUREn to aid interviewer.

RET20**********

Have any of those <Mn> <MEASUREn> failed or been removed?

1 Yes

2 No

88 Refused

99 Don't Know

IF ANS >1 skpto A25

RET60**********

Please distinguish between equipment that has failed versus equipment that has been removed for other reasons.

Overall, how many of the <Mn> <MEASUREn> that were installed have FAILED?

[Note to interviewer If the CFL doesn't allow the lights to switch on, then it has failed. If it fails and it is replaced by something else, then it is still considered a failure.]

____ enter number

IF ANS = 0 skpto RET70

IF ANS ≥ 70 skpto RET70

IF ANS >0 & <70 skpto RET62

IF MEASURE = CFL

RET62**********

Did you replace any of the failed [MEASUREn]?

1 Yes

2 No

88 Refused

99 Don't Know

IF ANS >1 skpto RET70

RET64**********

Were they replaced with … [READ LIST]?

1 Incandescent bulbs
2 CFLs
3 Other – Specify
88 Refused
99 Don't Know

RET70**********

IF CFL_FLAG = 1

Overall, how many of the <Mn> <MEASUREn> that were installed have been removed for reasons other than equipment failure?

[INTERVIEWER: A lamp has been removed if it was taken out of its original location when it was still functional (for example: taking out a light during a remodel).

_____ (enter number)

88 Refused
99 Don't Know

(number allowed must be <COUNTn> for that measre minus RET60)

IF (ANS=0) skpto A25

IF (ANS> 87) skpto A25

RET80**********

INSERT HERE: IF CFL_FLAG = 0 skp

And can you recall why the [MEASUREn] was/were removed? Was it because…[READ LIST]?

1 The savings were not worth the effort
2 The remodeling disabled the installation
3 The Type of business changed
4 Your business moved
5 Your equipment was upgraded
6 Other – RECORD VERBATIM
88 Refused
99 Don't Know

RET82**********

INSERT HERE: IF CFL_FLAG = 0 skp

Did you replace any of the removed [MEASUREn]?

1 Yes
2 No
88 Refused
99 Don't Know

IF (ANS >1) skpto A25

RET84**********
Were they replaced with …[READ LIST]?
1 Incandescent bulbs
2 CFLs
3 Other – SPECIFY
88 Refused
99 Don't Know

A25**********
Now I would like to talk about your decision to use the new energy efficient equipment.
How did you first become aware of the [PARTNERSHIP_NAME] program?
1 From technician that installed/provided the equipment
2 Other businesses / word of mouth
3 Local news / Radio / Newspaper
4 Local Government
5 Mail
6 School / Church / Community Organization – SPECIFY_____
7 A non-profit agency or environmental group – SPECIFY_____
8 Internet
9 Found on your own
10 Other - SPECIFY
88 Refused
99 Don't Know

IF (ANS= 4 | 7) skpto Q27 else skpto A28

A27**********
Which other local government or non-profit agencies are promoting the program? (multiple choice)
1 City office – SPECIFY_____
2 Church
3 Environmental group – SPECIFY_____
4 Non-profit agency – SPECIFY_____
10 Other – SPECIFY_____
88 Refused

99 Don't Know/Do not recall

A28**********

Why did your company participate in the [PARTNERSHIP_NAME] program? (multiple choice)

[INTERVIEWER: Do not read categories, probe 2 times]

1 Acquiring the latest technology
2 Saving money on electric bills
3 To receive free equipment
4 Replacing old or broken equipment
5 Because the program was sponsored by PG&E
6 Because the program was sponsored by local city, county, etc. government
7 Energy crisis
8 Helping protect the environment
9 Previous experience with other PG&E programs
10 Previous experience with other governmental programs
11 Previous experience with other rebate programs (not PG&E or government)
12 Recommended by utility account reps
13 Recommended by contractors
14 Recommended by School / Church / Community Organization - (SPECIFY) _____
15 Recommended by non-profit agency or environmental group
16 Participation in previous years
17 Part of a broader facility remodeling/renovation
18 To understand more about how energy costs are determined
19 To learn more about ways to reduce energy costs
20 Recommended by neighboring business or friend
21 A competing business participated
22 Other (SPECIFY) _____
88 Refused
99 Don't know

A30**********

Besides the [PARTNERSHIP_NAME] program, are you aware of OTHER programs or resources that are designed to promote energy efficiency for businesses like yours?

1 Yes
2 No
88 Refused
99 Don't Know

IF (ANS >1) skpto PE11

A31**********

What types of programs can you recall? (multiple choice)

1 Flex Your Power
2 Express Efficiency
3 Business Energy Audits
4 Other program sponsored by city / local government
5 Rebate program (unspecified)
6 Energy Star
7 Other PG&E programs
8 Programs offered by other contractors
9 Other programs (SPECIFY) _____
10 Not aware of any other programs
88 Refused
99 Don't know

A32**********

Did anyone from the [PARTNERSHIP_NAME] program recommend that you participate in any other energy conservation program?

1 Yes
2 No
88 Refused
99 Don't Know

IF (ANS >1) skpto A34

A33**********

Which programs did they suggest? (multiple choice)

1 Flex Your Power
2 Express Efficiency
3 Business Energy Audits
4 Other program sponsored by city / local government
5 Rebate program (unspecified)
6 Energy Star
7 Other PG&E programs
8 Programs offered by other contractors
9 Other programs (SPECIFY) _____
10 Not aware of any other programs
88 Refused
99 Don't know

A34**********

Have you been contacted directly to participate in any of these other programs?

1 Yes – Specify program _____
2 No
88 Refused
99 Don't Know

IF (ANS >1) skpto A36

A35**********
How were you contacted?
1 Phone call
2 In-person visit
3 Mail
4 Email
5 Other (SPECIFY) _____
88 Refused
99 Don't Know

A36**********
Did you participate in any of these other programs?
1 Yes (SPECIFY PROGRAM)
2 No
88 Refused
99 Don't Know

IF (ANS= 1) skpto A38
IF (ANS = 2) skpto A37
IF (ANS >2) skipto PE11

A37**********
Why did you decide not to participate in these other programs?
1 Cost
2 Did not trust program
3 Did not need equipment offered
4 Too time consuming
5 Program too confusing
6 Other (SPECIFY) _____
88 Refused
99 Don't Know

A38**********

Did your experience with [PARTNERSHIP_NAME] influence your decision whether or not to participate in this other program?

1 Yes, decided to participate because of Partnership

2 Yes, decided NOT to participate because of Partnership

3 No, Partnership had no influence on decision to participate in other program

88 Refused

99 Don't Know

PE11**********

Now I would like to ask you some questions about your program experience

Are you more or less likely to install energy-efficient products as a result of your experience with the program?

1 More likely

2 Less likely

3 Same

88 Refused

99 Don't Know

IF (ANS <3) skpto PE12

IF (ANS >3) skpto PE13

PE12**********

What energy efficiency equipment are you more likely to install?

_____(record open end)

INSERT BEFORE PE13:

IF CFL_FLAG = 0 skpto P25

PE13**********

When your CFLs burn out or fail, will you replace them with CFLs or incandescent lamps?

1 CFLs

2 Incandescent

3 Both

4 Other

88 Refused

99 Don't Know

IF (PE13 = 1 | PE = 3) skpto PE14 else skpto PE15

PE14**********

What if [PARTENERSHIP_NAME] did not pay for any of the cost to install the CFLs - would you still install them?

1 Yes

2 No

88 Refused

99 Don't Know

PE15**********

How much did the program influence your plans to use CFLs in the future? Was the program VERY, SOMEWHAT, or NOT AT ALL influential

1 VERY influential

2 SOMEWHAT influential

3 NOT AT ALL influential

88 Refused

99 Don't Know

IF (ANS = 3) skpto PE15A else skpto PE25

PE15A**********

Why do you say that?

_____(record open end)

PE25**********

In percentage terms, how much do you think your energy bill has been reduced due to the new equipment and energy saving recommendations you received from the program?

_____(record percentage)

88 Refused

99 Don't Know

PE30**********

Using a scale from 1 to 10, where 1 means you are not knowledgeable at all, and 10 means you are fully knowledgeable, how knowledgeable are you about energy efficiency products and how they perform?

_____(record response 1 - 10)

88 Refused

99 Don't Know

PE33**********

How about your knowledge BEFORE participating in the [PARTNERSHIP_NAME] program, using the same scale from 1 to 10?

_____(record response 1 - 10)

88 Refused

99 Don't Know

PE35**********

I am going to read you a brief series of statements and I would like you to tell me how well each statement describes your beliefs about energy efficient investments -- or if they even express your beliefs at all. We will again use a 1-to-10 scale, where 1 means you DISAGREE with the statement, and 10 means you agree completely with the statement. The first/next one is …

[Note to Programmer: Please randomize the following 8 statements. Answer options range from 1-10.]

1 When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.

2 I don't have the information I need to make an informed decision about energy efficient investments.

3 There is too much time and hassle involved in selecting a qualified energy efficiency contractor.

4 Lack of financing is a barrier to our organization making energy efficiency investments that we want to make.

5 Getting a utility rebate is too much hassle.

6 I need the owner's consent to make improvements.

7 I'm not at this location for long

8 It's not worth investing because it's not my building

_____(record answer from 1-10)

88 Refused

99 Don't Know

SPON1**********

Now I would like to briefly talk about your participation in the program and what influenced you to install high efficiency equipment. In deciding to participate in the [PARTNERSHIP_NAME] program, how important was it to you that [LOCAL_GOVERNMENT] sponsored the program? Would you say it was…

1 Very Important

2 Somewhat Important

3 Not at all Important

88 Refused

99 Don't Know

SPON2**********

How likely would you have been to participate if the program was not sponsored by [LOCAL_GOVERNMENT]? Would you say that your participation would have been…

1 Very likely

2 Somewhat likely

3 Somewhat unlikely

4 Very unlikely

88 Refused

99 Don't Know

SPON3**********

How important was it to you that PG&E sponsored the program? Would you say it was. . .

1 Very Important

2 Somewhat Important

3 Not at all Important

88 Refused

99 Don't Know

SPON4**********

How likely would you have been to participate if the program was no*t* sponsored by PG&E? Would you say that your participation would have been…

1 Very likely

2 Somewhat likely

3 Somewhat unlikely

4 Very unlikely

88 Refused

99 Don't Know

REB10**********

Before you learned about the [PARTNERSHIP_NAME] program, were you already considering installing [MEASUREn]?

1 Yes

2 No

88 Refused

99 Don't Know

REB50**********

Regarding the [MEASUREn], which of the following three statements best describes the actions you would have taken had the [PARTNERSHIP_NAME] program not been available: [

1 We would have bought NO equipment

2 We would have bought the SAME energy efficient equipment

3 We would have bought standard equipment

88 Refused

99 Don't know

IF (ANS=2) skpto REB55 else skpto SAT2

REB55**********

When would you have bought [MEASURE] if the program had not provided it?

1 At the same time

2 Within a year

3 More than a year

88 Refused
99 Don't know

IF (ANS=3) skpto REB60 else REB65

REB60**********
How many years would you have waited before buying [MEASUREn] if they had not been provided through the program?

_____(record number of years)

88 Refused
99 Don't Know

REB65**********
Would you have purchased the same number of [MEASUREn] as were installed through the program?

1 Yes, would have installed the same number
2 No
88 Refused
99 Don't Know

SAT2**********
We would like to get a sense of your satisfaction with the program. On a scale of 1 to 10 where 10 means EXTREMELY SATISFIED and 1 means EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Overall satisfaction with the [PARTNERSHIP_NAME] program experience

_____(record number 1-10)

SAT5**********
Information provided about the program
(10 means EXTREMELY SATISFIED and 1 means EXTREMELY DISSATISFIED)

_____(record number 1-10)

SAT10**********
Interaction with program staff
(10 means EXTREMELY SATISFIED and 1 means EXTREMELY DISSATISFIED)

_____(record number 1-10)

SAT30**********
Satisfaction with the bill savings
(10 means EXTREMELY SATISFIED and 1 means EXTREMELY DISSATISFIED)

_____(record number 1-10)

SAT32**********

Satisfaction with the initial audit process

_____(record number 1-10)

(INTERVIEWER: if there was no audit ENTER "0")

SAT33

Satisfaction with the equipment installation process

_____(record number 1-10)

IF (SAT32 < SAT33) skpto SAT34 else skpto SAT45

If (SAT33 < SAT32) skpto SAT35 else skip SAT45

SAT34**********

You gave a lower rating for the audit process than for the installation process, what was it about the audit that caused you to rate it lower?

_____record open end

SAT35**********

You gave a lower rating for the installation process than for the audit process, what was it about the installation that caused you to rate it lower?

_____record open end

SAT44**********

Why do you say that?

_____(record open end)

SAT45**********

Other than what you already mentioned, were you at all dissatisfied with any other aspects of the program?

1 Yes

2 No

88 Refused

99 Don't Know

IF (ANS >1) skpto RENT1

SAT50**********

Why?

_____(record open end)

RENT1**********

How active a role does your business take in making lighting and climate control equipment purchase decisions at this facility?

1 Very active
2 Somewhat active
3 Slightly active
4 Not active at all
88 Refused
99 Don't Know

RENT5**********

Does your business own or lease the facility?

1 Own
2 Lease/rent
88 Refused
99 Don't Know

IF (ANS >1) skpto RENT10

RENT10**********

How long is the term of your lease?

1 1 year
2 2 years
3 3 years
4 4 years
5 5 years
6 6 years
7 7 years
8 8 years
9 9 years
10 10 years
11 Greater than 10 years
12 Month to month
13 Other (Specify)
88 Refused
99 Don't Know

RENT15**********

How familiar are you with the terms of your lease regarding energy costs and energy efficiency improvements to the facility you occupy? Would you say you are:

1 Not at all familiar

2 Somewhat familiar
3 Very familiar
88 Refused
99 Don't Know

HR025**********

Finally, I would like to ask a few question about your opening hours - Are you typically open daily, Monday through Friday?

1 Yes
2 No
88 Refused
99 Don't Know

IF (ANS >1) skpto HR030

HR026**********

How many days are you closed Monday through Friday?

1 None
2 1 day
3 2 days
4 3 days
5 4 days
6 5 days
88 Refused
99 Don't Know

HR030**********

During what weekday hours are your INDOOR LIGHTS currently on?

Record time lights are on: From_____ to _____ (use military time)

1 On 24 Hrs HR040
2 Never On HR040
88 Refused HR040
99 Don't know HR040

HR040**********

How about Saturdays?

Record time lights are on: From_____ to _____ (use military time)

1 On 24 Hrs
2 Never on
5 Open by appointment
88 Refused

99 Don't know

HR050**********
And Sundays?
Record time lights are on: From_____ to _____ (use military time)
1 Never On
2 On 24 Hrs
6 Open by appointment
88 Refused
99 Don't know

FIRM1**********
Finally, I'd like to finish up by asking you a few questions about your firm.
Can you estimate the total square footage of your facility at this [SERV_ADDR] to be …?
1 Less than 2,500 square feet
2 2,500 but less than 5,000 square feet
3 5,000 but less than 10,000 square feet
4 10,000 but less than 20,000 square feet
5 20,000 but less than 50,000 square feet
6 50,000 but less than 100,000 square feet
7 Ag/Non-facility – Outdoors
88 Refused
99 Don't know

FIRM5**********
Which of the following categories describes the number of employees your firm has at this [SERV_ADDR]?
1 1 to 5
2 6 to 10
3 11 to 20
4 21 to 50
5 51 to 100
6 Or, over 100
88 Refused
99 Don't Know

FIRM12**********
How long has your business been at this location?
1 Less than one year
2 Years - SPECIFY

88 Don't know
99 Refused

FIRM14
How many locations does your firm have in California?
1 1
2 2 to 4
3 5 to 10
4 11 to 25
5 Over 25
88 Refused
99 Don't Know

FIRM15**********
What is the main activity at your business?
1 Office
2 Retail (non-food)
3 College/university
4 School
5 Grocery store
6 Convenience store
7 Restaurant
8 Health care/hospital
9 Hotel or motel
10 Warehouse
11 Personal Service
12 Community Service/Church/Temple/Municipality
13 Industrial Process/Manufacturing/Assembly
14 Condo Assoc/Apartment Mgmt
15 Agriculture
77 Other (SPECIFY)_____
88 Refused
99 Don't Know

L10**********
Other than English, what language is primarily spoken at your business? (multiple choice)
1 English only
2 Spanish
3 Chinese
4 Korean
5 Vietnamese

6 Japanese
7 Indian
77 Other (SPECIFY)_____
88 Refused
99 Don't know

TERM1**********

Thank you very much, those are all the questions I have for you.

In order to improve this program's performance, PG&E wants to make sure that small business are in fact getting the energy savings associated with this program. .

Based on your answers Population Research Systems, on behalf of PG&E would like to visit your business and quickly verify that the energy efficient installations you received through the [PARTNERSHIP_NAME] program are operating. The visit will take less than 15 minutes.

Q11**********

May we enroll you to participate in this project?

1. YES
2. NO

If no, TERM2

I5. Great, our technician will be the person contacting you to schedule an appointment to visit your business. What is the name and phone number of the person we should contact to set up the appointment?

(record name and phone number)

TERM2**********

Thank you very much for helping PG&E to improve its energy saving efforts. If you have any additional questions regarding this effort that I am unable to answer today, please call Beatrice Mayo at PG&E at (415) 973-5269.

AFTER COMPLETION OF INTERVIEW:

Record Gender:

1 Male
2 Female

PG&E PARTNERSHIPS PROGRAM PARTICIPANT SURVEY – Residential

INTRO1**********

Hello, my name is - name - and I am calling from Population Research Systems on behalf of PG&E. May I please speak with [CONTACT_NAME]?

This is not a sales call.

[IF NO PROGRAM CONTACT Name available:]

SCREEN5**********

Just to check, did your household participate in an energy efficiency program sponsored by [PARTNERSHIP_NAME] at [SERVICE_ADDRESS]?

This is a PG&E program where your household received either a rebate or free equipment for installing one or more energy-efficient products covered under the program.

1 Yes, participated in program at this location (skip to VER5)
2 Yes, participated in program, but at other location
3 Yes, participated in PG&E program, but don't recall that as the name (skip to VER5)
4 NO, did NOT participate in program
5 NO, did NOT receive rebate or free equipment (but did participate in program)
88 Refused
99 Don't know

SCREEN10**********

Is it possible that someone else at [SERVIVE_ADDRESS] dealt with the installation of energy-efficient equipment, or that the contractor you hired dealt with the rebate paperwork?

1 Someone else dealt with it (schedule CALLBACK)
2 Installed EE measures (but do not recall rebate or program)
3 Applied for program/have not installed EE measures yet
77 Other (SPECIFY) _____
88 Refused
99 Don't know

IF ANS>1 Term2

VER5**********

I would like to confirm some information in PG&E's database. Our records show that you had the following equipment installed through the [PARTNERSHIP_NAME] Program. Can you please verify that for me you received…

(NOTE: Verify measure and measure quantity. Note below any discrepancies in either measure description or measure quantity).

Interviewer: Read the number and the type of measure and enter the number given by respondent. If respondent says 'yes' enter the same number as stated.

Quantity	Measure	Description of Measure	Save number given by respondent as Count1 etc.
M1	MEASURE1	MEAS_DESCRIPTION1	
M2	MEASURE2	MEAS_DESCRIPTION2	
M3	MEASURE3	MEAS_DESCRIPTION3	
M4	MEASURE4	MEAS_DESCRIPTION4	
M5	MEASURE5	MEAS_DESCRIPTION5	
M6	MEASURE6	MEAS_DESCRIPTION6	
M7	MEASURE7	MEAS_DESCRIPTION7	
M8	MEASURE8	MEAS_DESCRIPTION8	

VER10**********

Did someone from the program install all of the products, or were they given to you for you to install later?

1 Yes, program installed equipment

2 No, equipment dropped off

88 Refused

99 Don't Know

VER11**********

Did you receive an energy audit prior to receiving the equipment?

1 Yes (skipto VER12)

2 No (skipto VER13)

88 Refused (skipto VER13)

99 Don't know (skipto VER13)

VER12**********

Did the same person that did the audit also provide the equipment?

1 Yes

2 No

88 Refused

99 Don't Know

VER13**********

Did anybody else contact you about this program?

1 Yes

2 No

88 Refused

99 Don't Know

IF (ANS >1) skpto VER15

VER14 **********

Now, I'd like to ask you some questions about Compact Fluorescent Lights or CFLs.

What did they discuss with you?

1 Wanted to verify installation

2 Other (specify)_____

88 Refused

99 Don't Know

IF CFL_FLAG1 | CFL_FLAG2 | CFL_FLAG3 | CFL_FLAG4 | CFL_FLAG5 | CFL_FLAG6 | CFL_FLAG7 | CFL_FLAG8 = 0 skpto SAT1

VER15**********

When the CFLs were installed, what kind of lamp did you replace?

As I read each of the following, please say yes or no.

(multiple choice)

1 Incandescent

2 CFLs

3 HID

4 Mercury vapor

5 Other (SPECIFY)_____

88 Refused

99 Don't Know

VER16**********

Were all << insert total count of CFLs as given by respondent in VER5>> CFLs installed or were some of them placed in storage for later use?

1 All installed

2 Some installed

3 Some in storage

4 All in storage

88 Refused

99 Don't Know

IF VER16 = 1 | 88 | 99 skipto VER20

IF VER16= 2 skipto VER17

IF VER16= 3 or 4 skipto VER18

VER17**********

How many of the <<insert total count of CFLs as given by respondent in VER5>> CFLs were installed?

_____(get number)

88 Refused

99 Don't Know

VER18**********
Why weren't all CFLs installed?
_____(record response)
(NTERVIEWER: If some CFLs were put in storage, ask why?)

VER20A**********
Other than the CFLs, was all of the other equipment installed?
1 Yes
2 No
3 Maybe / Not sure /Don't know yet
88 Refused
99 Don't Know

IF (ANS = 2) skpto VER20B
IF (ANS =1 | ANS > 87) skpto SAT1

VER20B**********
Which equipment you received was not installed?
_____(record response)

VER21**********
Why was the equipment not installed?
1 Already had equipment installed prior to program
2 Did not fit / wrong equipment
3 Did not know how to install
4 Never wanted equipment
5 Do not like the technology
88 Refused
99 Don't know

VER22**********
Do you plan to install the equipment in the future?
1 Yes
2 No
3 Maybe
88 Refused
99 Don't Know

[For the following questions SAT1 and SAT2, ask for a MAXIMUM of 3 records – MEASURE1, MEASURE2, MEASURE3)]

SAT1**********

On a scale of 1 to 10, where 10 is EXTREMELY SATISFIED and 1 is EXTREMELY DISSATISFIED, how satisfied have you been with the performance of the <MEASUREn>.

_____ (record number from 1 - 10)

88 Refused

99 Don't Know

If SAT1 < 6 skpto SAT2 else skpto RET20

SAT2**********

Why did you say that?

_____(record open end)

RET20**********

(Note to programmer: Repeat RET20 and RET84 for every measure in the sample)

Have any of those <Mn> <MEASUREn> failed or been removed?

1 Yes

2 No

88 Refused

99 Don't Know

IF ANS >1 skpto A25

RET60**********

(Note to programmer: Repeat RET20 and RET84 for every measure in the sample)

Please distinguish between equipment that has failed versus equipment that has been removed for other reasons.

Overall, how many of the <Mn> <MEASUREn> that were installed have FAILED?

[Note to interviewer If the CFL doesn't allow the lights to switch on, then it has failed. If it fails and it is replaced by something else, then it is still considered a failure.]

____ enter number

IF ANS = 0 skpto RET70

IF ANS $\geq$ 70 skpto RET70

IF ANS >0 & <70 skpto RET62

IF MEASURE = CFL

RET62**********

(Note to programmer: Repeat RET20 and RET84 for every measure in the sample)

Did you replace any of the failed [MEASUREn]?

1 Yes
2 No
88 Refused
99 Don't Know

IF ANS >1 skpto RET70

RET64**********

(Note to programmer: Repeat RET20 and RET84 for every measure in the sample)

Were they replaced with … [READ LIST]?

1 Incandescent bulbs
2 CFLs
3 Other – Specify
88 Refused
99 Don't Know

RET70**********

(Note to programmer: Repeat RET20 and RET84 for every measure in the sample)

Overall, how many of the <Mn> <MEASUREn> that were installed have been removed for reasons other than equipment failure?

[INTERVIEWER: A lamp has been removed if it was taken out of its original location when it was still functional (for example: taking out a light during a remodel).

_____ (enter number)

88 Refused
99 Don't Know

(number allowed must be <COUNTn> for that measure minus RET60)

IF (ANS=0) skpto A25

IF (ANS> 87) skpto A25

RET80**********

(Note to programmer: Repeat RET20 and RET84 for every measure in the sample)

And can you recall why the [MEASUREn] was/were removed? Was it because…[READ LIST]?

1 The savings were not worth the effort
2 The remodeling disabled the installation
3 The Type of business changed
4 Your business moved
5 Your equipment was upgraded
6 Other – RECORD VERBATIM
88 Refused
99 Don't Know

RET82**********

(Note to programmer: Repeat RET20 and RET84 for every measure in the sample)

Did you replace any of the removed [MEASUREn]?

1 Yes
2 No
88 Refused
99 Don't Know

IF (ANS >1) skpto A25

RET84**********

(Note to programmer: Repeat RET20 and RET84 for every measure in the sample)

Were they replaced with …[READ LIST]?

1 Incandescent bulbs
2 CFLs
3 Other – SPECIFY
88 Refused
99 Don't Know

A25**********

Now I would like to talk about your decision to use the new energy efficient equipment.

How did you first become aware of the [PARTNERSHIP_NAME] program?

DO NOT READ ANSWERS

1 From technician that installed/provided the equipment
2 Other businesses / word of mouth / friend / relative
3 Local news / Radio / Newspaper
4 Local Government
5 Mail

6 School / Church / Community Organization – SPECIFY_____
7 A non-profit agency or environmental group – SPECIFY_____
8 Internet
9 Found on your own
10 Other - SPECIFY
88 Refused
99 Don't Know

IF (ANS= 4 | 7) skpto Q27 else skpto A28

A27**********
Which other local government or non-profit agencies are promoting the program? (multiple choice)
1 City / County office – SPECIFY_____
2 Church
3 Environmental group – SPECIFY_____
4 Non-profit agency – SPECIFY_____
10 Other – SPECIFY_____
88 Refused
99 Don't Know/Do not recall

A28**********
Why did your company participate in the [PARTNERSHIP_NAME] program? (multiple choice)
[INTERVIEWER: Do not read categories, probe 2 times]
1 Acquiring the latest technology
2 Saving money on electric bills
3 To receive free equipment
4 Replacing old or broken equipment
5 Because the program was sponsored by PG&E
6 Because the program was sponsored by local city, county, etc. government
7 Energy crisis
8 Helping protect the environment
9 Previous experience with other PG&E programs
10 Previous experience with other governmental programs
11 Previous experience with other rebate programs (not PG&E or government)
12 Recommended by utility account reps
13 Recommended by contractors
14 Recommended by School / Church / Community Organization - (SPECIFY) _____
15 Recommended by non-profit agency or environmental group
16 Participation in previous years

17 Part of a broader facility remodeling/renovation
18 To understand more about how energy costs are determined
19 To learn more about ways to reduce energy costs
20 Recommended by neighboring business or friend
21 A competing business participated
22 Other (SPECIFY) _____
88 Refused
99 Don't know

A30**********

Besides the [PARTNERSHIP_NAME] program, are you aware of OTHER programs or resources that are designed to promote energy efficiency for businesses like yours?

1 Yes
2 No
88 Refused
99 Don't Know

IF (ANS >1) skpto PE11

A31**********

What types of programs can you recall? (multiple choice)

1 Flex Your Power
2 Express Efficiency
3 Business Energy Audits
4 Other program sponsored by city / local government
5 Rebate program (unspecified)
6 Energy Star
7 Other PG&E programs
8 Programs offered by other contractors
9 Other programs (SPECIFY) _____
10 Not aware of any other programs
88 Refused
99 Don't know

A32**********

Did anyone from the [PARTNERSHIP_NAME] program recommend that you participate in any other energy conservation program?

1 Yes

2 No
88 Refused
99 Don't Know

IF (ANS >1) skpto A34

A33**********
Which programs did they suggest? (multiple choice)
1 Flex Your Power
2 Express Efficiency
3 Business Energy Audits
4 Other program sponsored by city / local government
5 Rebate program (unspecified)
6 Energy Star
7 Other PG&E programs
8 Programs offered by other contractors
9 Other programs (SPECIFY) _____
10 Did not suggest any other programs/ Do not recall program suggested
88 Refused
99 Don't know

A34**********
Have you been contacted directly to participate in any of these other programs?
1 Yes – Specify program _____
2 No
88 Refused
99 Don't Know

IF (ANS >1) skpto A36

A35**********
How were you contacted?
1 Phone call
2 In-person visit
3 Mail
4 Email
5 Other (SPECIFY) _____
88 Refused

99 Don't Know

A36**********

Did you participate in any of these other programs?

1 Yes (SPECIFY PROGRAM)
2 No
88 Refused
99 Don't Know

IF (ANS= 1) skpto A38
IF (ANS = 2) skpto A37
IF (ANS >2) skipto PE11

A37**********

Why did you decide not to participate in these other programs?

1 Cost
2 Did not trust program or contractor
3 Did not need equipment offered
4 Too time consuming
5 Program too confusing
6 Other (SPECIFY) _____
88 Refused
99 Don't Know

A38**********

Did your experience with [PARTNERSHIP_NAME] influence your decision whether or not to participate in this other program?

1 Yes, decided to participate because of Partnership
2 Yes, decided NOT to participate because of Partnership
3 No, Partnership had no influence on decision to participate in other program
88 Refused
99 Don't Know

PE11**********

Are you more or less likely to install energy-efficient products as a result of your experience with the program?

1 More likely

2 Less likely
3 Same
88 Refused
99 Don't Know

IF (ANS <3) skpto PE12
IF (ANS >3) skpto PE13

PE12**********
What energy efficiency equipment are you more likely to install?
_____(record open end)

INSERT BEFORE PE13:
IF CFL_FLAG = 0 skpto P25

PE13**********
If your CFLs burn out or fail, will you replace them with CFLs or incandescent lamps?
1 CFLs
2 Incandescent
3 Both
4 Other
88 Refused
99 Don't Know

IF (PE13 = 1 | PE = 3) skpto PE14 else skpto PE25

PE14**********
What if [PARTNERSHIP_NAME] did not pay for any of the cost to install the replacement CFLs - would you still install them?
1 Yes
2 No
88 Refused
99 Don't Know

PE15**********
How much did the program influence your plans to use CFLs in the future? Was the program VERY, SOMEWHAT, or NOT AT ALL influential
1 VERY influential

2 SOMEWHAT influential
3 NOT AT ALL influential
88 Refused
99 Don't Know

IF (ANS = 3) skpto PE15A else skpto PE25

PE15A**********

Why do you say that?

_____(record open end)

PE25**********

In percentage terms, how much do you think your energy bill has been reduced due to the new equipment and energy saving recommendations you received from the program?

_____(record percentage)
88 Refused
99 Don't Know

PE30**********

Using a scale from 1 to 10, where 1 means you are not knowledgeable at all, and 10 means you are fully knowledgeable, how knowledgeable are you about energy efficiency products and how they perform?

_____(record response 1 - 10)
88 Refused
99 Don't Know

PE33**********

How about your knowledge BEFORE participating in the [PARTNERSHIP_NAME] program, using the same scale from 1 to 10?

_____(record response 1 - 10)
88 Refused
99 Don't Know

PE35**********

I am going to read you a brief series of statements and I would like you to tell me how well each statement describes your beliefs about energy efficient investments -- or if they even express your beliefs at all. We will again use a 1-to-10 scale, where 1 means you COMPLETELY DISAGREE with the statement, and 10 means you COMPLETELY AGREE with the statement.

[Note to Programmer: Please randomize the following 8 statements. Answer options range from 1-10.]

1 When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.

2 I don't have the information I need to make an informed decision about energy efficient investments.

3 There is too much time and hassle involved in selecting a qualified energy efficiency contractor.

4 Lack of financing, is a barrier to our organization making energy efficiency investments that we want to make.

5 Getting a utility rebate is too much hassle.

6 The space is rented and I need the owner's consent to make improvements.

7 I'm not at this location for long

8 It's not worth investing because it's not my building

_____(record answer from 1-10)

88 Refused

99 Don't Know

SPON1**********

Now I would like to briefly talk about your participation in the program and what influenced you to install high efficiency equipment. In deciding to participate in the [PARTNERSHIP_NAME] program, how important was it to you that [LOCAL_GOVERNMENT] sponsored the program? Would you say it was…

1 Very Important

2 Somewhat Important

3 Not at all Important

88 Refused

99 Don't Know

SPON2**********

How likely would you have been to participate if the program was not sponsored by [LOCAL_GOVERNMENT]? Would you say that your participation would have been…

1 Very likely

2 Somewhat likely

3 Somewhat unlikely

4 Very unlikely

88 Refused

99 Don't Know

SPON3**********

How important was it to you that PG&E sponsored the program? Would you say it was. . .

1 Very Important
2 Somewhat Important
3 Not at all Important
88 Refused
99 Don't Know

SPON4**********

How likely would you have been to participate if the program was no*t* sponsored by PG&E? Would you say that your participation would have been…

1 Very likely
2 Somewhat likely
3 Somewhat unlikely
4 Very unlikely
88 Refused
99 Don't Know

NOTE TO PROGRAMMER:

Repeat the section REB10 through REB65 for ALL measures in the sample.

REB10**********

Before you learned about the [PARTNERSHIP_NAME] program, were you already considering installing [MEASUREn]?

1 Yes
2 No
88 Refused
99 Don't Know

REB50**********

Regarding the [MEASUREn], which of the following three statements best describes the actions you would have taken had the [PARTNERSHIP_NAME] program not been available: [

1 We would not have purchased any new equipment
2 We would have bought the SAME energy efficient equipment
3 We would have bought standard equipment
88 Refused
99 Don't know

IF (ANS=2) skpto REB55 else skpto SAT2

REB55**********

When would you have bought [MEASURE] if the program had not provided it?

1 Earlier/Sooner
2 At the same time
3 Within a year
4 More than a year
88 Refused
99 Don't know

IF (ANS=4) skpto REB60 else REB65

REB60**********

How many years would you have waited before buying [MEASUREn] if they had not been provided through the program?

_____(record number of years)

88 Refused
99 Don't Know

REB65**********

Would you have purchased the same number of [MEASUREn] as were installed through the program?

1 Yes, would have purchased the SAME number
2 No, would have purchased MORE
3 No, would have purchased FEWER
88 Refused
99 Don't Know

SAT2**********

We would like to get a sense of your satisfaction with the program. On a scale of 1 to 10 where 10 means EXTREMELY SATISFIED and 1 means EXTREMELY DISSATISFIED, please rate your satisfaction with the following factors:

Overall satisfaction with the [PARTNERSHIP_NAME] program experience

_____(record number 1-10)

SAT5**********

Information provided about the program

(10 means EXTREMELY SATISFIED and 1 means EXTREMELY DISSATISFIED)

_____(record number 1-10)

SAT10**********

Interaction with program staff

(10 means EXTREMELY SATISFIED and 1 means EXTREMELY DISSATISFIED)

_____(record number 1-10)

SAT44**********

Why do you say that?

_____(record open end)

SAT45**********

Other than what you already mentioned, were you at all dissatisfied with any other aspects of the program?

1 Yes

2 No

88 Refused

99 Don't Know

SAT50**********

Why?

_____(record open end)

DE1**********

Before we finish, I have just a few more questions about your household to make sure we're getting a representative sample of California residents.

Do you own your home or rent?

1 Own

2 Rent

88 Refused

99 Don't Know

DE2**********

What type of home do you live in? [DO NOT READ. CHECK ONLY ONE RESPONSE]

1 Single family (attached, detached, duplex, townhouse, rowhouse)
2 Apartment (any size)
3 Mobile home
4 Other - SPECIFY
88 Refused
99 Don't Know

DE3**********

Approximately when was your home built? (IF NEEDED READ) Was it…[

1 Other Specifics Provided – SPECIFY_____(enter year specified)
2 Within the last 5 years
3 5-10 years ago
4 10-20 years ago
5 20-30 years ago
5 30-45 years ago
6 45-60 years ago
7 Before 1945
88 Refused
99 Don't Know

DE4**********

About how large is your home in terms of total square feet?

1 less than 500 square feet
2 500-999 square feet
3 1,000 to 1,499 square feet
4 1,500-1,999 square feet
5 2,000-2,499 square feet
6 2,500-2,999 square feet
7 3,000 or more square feet
88 Refused
99 Don't Know

DE5. **********

How many years have you lived at this address?

1 _____# Years (record number of years)
88 Refused
99 Don't Know

DE6. **********

How many people live in your home year-round of the following age groups? [READ 1-4 pause for response after each category]

1 18 or younger
2 19-34
3 35-59
4 60 or older
88 Refused
99 Don't Know

DE7**********

Which of the following describes your highest level educational background?

1 Some high school
2 High school graduate
3 Trade or technical school
4 Some college
5 College graduate
6 Some graduate school
7 Graduate degree
88 Refused
99 Don't Know

DE8 **********

Which of the following best represents your annual household income in 2004, before taxes? Is it

1 $20,000 or less
2 $20,000-49,999
3 $50,000-74,999
4 $75,000-99,999
5 $100,000 or more
88 Refused
99 Don't Know

DE9 **********

Which of the following best describes your racial or ethnic background? [READ]

1 Hispanic
2 African American

3 Caucasian
4 Asian American
5 Native American
6 Interracial
7 Other - SPECIFY_____
88 Refused
99 Don't Know

DE10 **********

What is the primary language spoken in your home?

1 English
2 Spanish
3 Mandarin
4 Cantonese
5 Tagalog
6 Korean
7 Vietnamese
8 Russian
9 Japanese
10 Other – SPECIFY_____
88 Refused
99 Don't Know

TERM1**********

Thank you very much, those are all the questions I have for you.

In order to improve this program's performance, PG&E wants to make sure that customers are in fact getting the energy savings associated with this program. .

Based on your answers Population Research Systems, on behalf of PG&E would like to visit your home and quickly verify that the energy efficient installations you received through the [PARTNERSHIP_NAME] program are operating properly. The visit will take less than 15 minutes.

Q11**********

May we enroll you to participate in this project?

3. YES
4. NO

If no, TERM2

I5. Great, our technician will be the person contacting you to schedule an appointment to visit your home. What is the name and phone number of the person we should contact to set up the appointment?

(record name and phone number)

TERM2**********

Thank you very much for helping PG&E to improve its energy saving efforts. If you have any additional questions regarding this effort that I am unable to answer today, please call Beatrice Mayo at PG&E at (415) 973-5269.

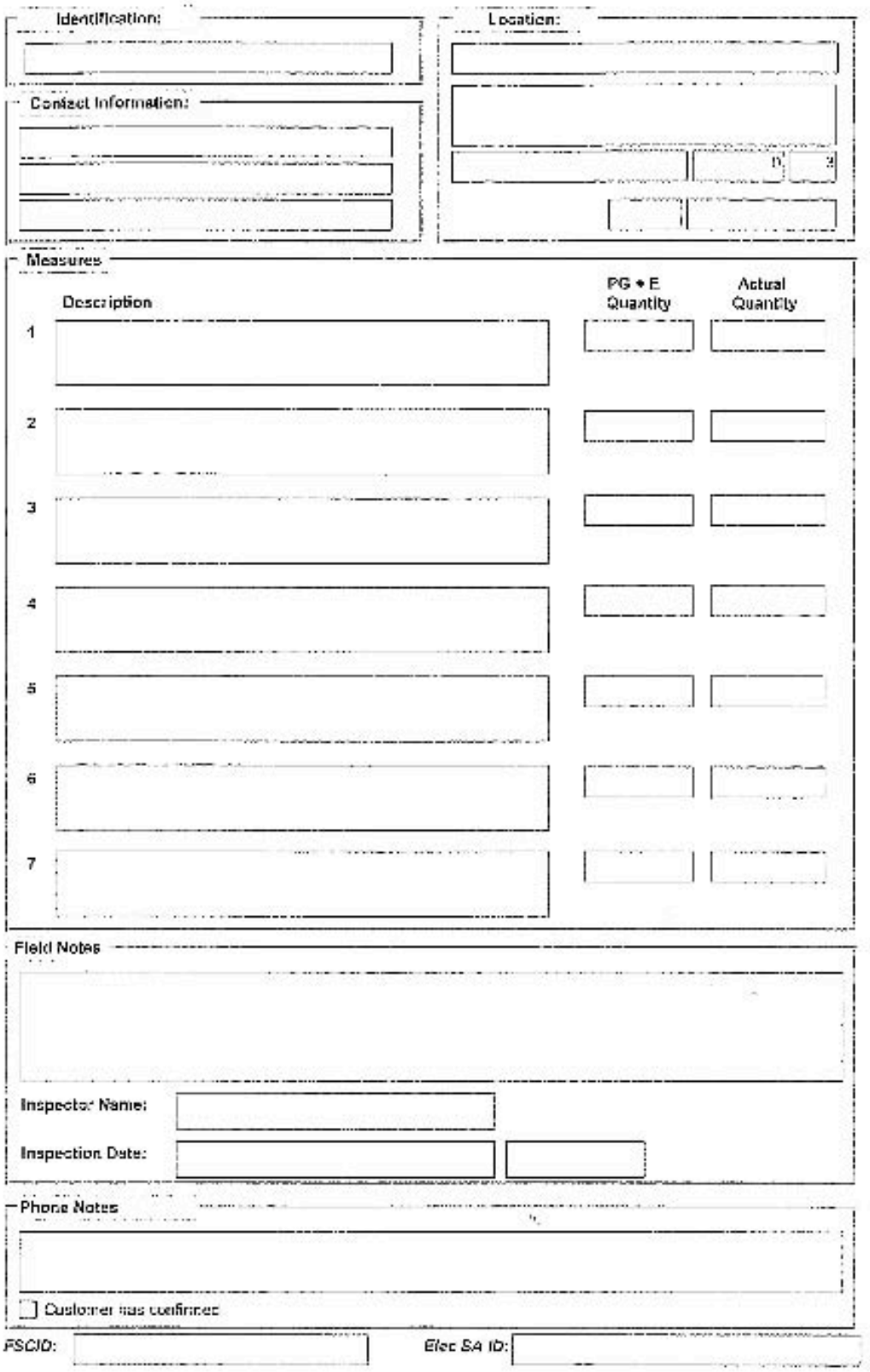
AFTER COMPLETION OF INTERVIEW:

Record Gender:

1 Male

2 Female

PG&E PARTNERSHIPS PROGRAM ON-SITE MEASURES VERICATION FORM



PG&E PARTNERSHIPS PROGRAM IN-DEPTH INTERVIEW GUIDE

Name:

Date:

IN-DEPTH INTERVIEW OBJECTIVES

- ❑ Discuss response confidentiality;

- ❑ Discuss overall program evaluation objectives of respective partnership;

- ❑ Obtain program manager's input to help refine evaluation objectives and research topics;

- ❑ Ensure evaluation will provide program managers with useful findings to help with future program design;

- ❑ Educate evaluation team on program design, verification processes, marketing activities, and vendor operations.

PROGRAM EVALUATION OBJECTIVES

Our objectives are: To utilize and combine existing program tracking data, conducted staff interviews, onsite audit data, as well as inspections of verified process documentation and databases to:

- ❑ Provide feedback and evaluation to assist with program implementation;

- ❑ Conduct participant surveys;

- ❑ Review verification/inspection process & results;

- ❑ Conduct On-Site Verification Audits;

- Verify program accomplishments.

PARTNERSHIP PROGRAM INFORMATION

- Partnership name;
- Name, role of interviewee;
- Size of program ($), goals;
- Describe Partnership staff -- role of each staff member, contact information (including PG&E staff and representatives, Local Government, Contractors/Vendors, CBOs, Others). Organizational chart if available.

PARTNERSHIP PROGRAM PURPOSE AND STRUCTURE

- What is the purpose of the program?
- What is the program logic/theory?
- How are the program participants (PG&E, govts, vendors) benefiting (or not benefiting) from the existence and/or participation this program?
- Describe the program elements and how they interact with each other? Describe the allocation of the budget/effort/goals between those elements?

- How does this partnership interact with the other partnerships? Discuss in terms of planning, management as well as implementation.

- Describe how the partnership interacts with existing statewide, utility and TPI programs. Describe not only the mechanics, but how well this overall integration into the existing system is working and/or any problems.

- (NOTE: These details can apply to the above topics re: coordination:)
  - What areas of the program are coordinated (i.e. marketing, incentive levels, sales, vendor contact, rebate levels)?
  - How was the coordination achieved?
  - How successful was the coordination?
  - How useful is the coordination?
  - What areas do you feel could be improved?
  - Has the requirement for coordination had any negative effects on implementing the program?

- What role did interviewee play in planning the program? Get info about how and when the program was planned, who was involved, and any related issues.

PARTNERSHIP PROGRAM STATUS

- What is the current status of the program in terms of a general overview and how far along the program is toward meeting its goals overall for each program element. What are the respective overall goals and are they on track for meeting them? What is current cost-effectiveness of program?

- What were/are the issues with the program this year? When did the contract get signed? When did the work begin?

PARTNERSHIP PROGRAM TRACKING AND DATABASES

- How are program databases kept? Who to contact? Issues with databases? How do these databases interact with each other, including other Partnership databases, existing Express, SPC, audit, Pacific Energy Center, etc.?

- How are the tracking systems used to report accomplishments, savings estimate forecasts and budget?

- What is the inspection process implemented? How are inspection sites selected? What information is collected on site? How is that information tracked?

CLOSING COMMENTS AND QUESTIONS

- What is working well about the program and what is not? What needs to be improved?

- Is the partnership likely to continue next year? What are the changes, if any?

- From your perspective, are there any issues we have overlooked that we should be asking about and/or include in the evaluation research?

- Any there other issues or topics or questions that need to be discussed?

DATA AND INFORMATION REQUESTS

- Request copies of contact information for all of the players.
- Request program implementation plans (PIPs).
- Get copies of program collateral and other relevant material.