Evaluation of the SCE 2004-05 Small Business Energy Connection Program

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888 SW Fifth Avenue, Suite 1460
Portland, Oregon 97204
503-222-6060

Acknowledgements

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EXECUTIVE SUMMARY

SBEC PROGRAM BACKGROUND

The Southern California Edison (SCE) Non-Residential Hard-to-Reach Program, also known as the Small Business Energy Connection (SBEC) Program, is designed to produce cost-effective, long term demand and energy savings by providing no-cost energy-efficient equipment retrofits to small and very small business customers in SCE's service territory. Small and very small business customers often lack information about the benefits of energy efficiency improvements and do not take advantage of energy savings opportunities due to limited resources to purchase and install equipment with higher start-up costs. Furthermore, since the majority of these customers rent their business space, there is a split incentive barrier that hinders the adoption of energy efficiency improvements. The SBEC program addresses these barriers by providing no-cost energy-efficient retrofits, and is intended to stimulate long term change in customers' knowledge and behavior regarding energy-efficient business improvements.

Measures eligible for the SBEC Program are primarily lighting applications and include CFLs, LED exit signs, and T8 fixtures and ballasts. In addition to lighting measures, the program also covers setback programmable thermostats. Customers are first given a complete energy assessment of their facility, after which a set of recommended measures is developed. Following this, a contractor visits the business and installs the measures identified in the initial audit.

The SBEC Program serves the entire SCE service territory and targets underserved communities in partnership with Los Angeles County Office of Small Business and selected community based organizations (CBOs) and faith based organizations (FBOs). The CBOs and FBOs conduct their activities through a performance-based contract with SCE, and are uniquely positioned to understand the needs of their community and develop customized program delivery plans. The CBOs and FBOs that participate in the SBEC program are:

- CHARO Community Development Corporation

- First African Methodist Episcopal (FAME) Church Renaissance, and

- Titan Foundation

The distribution of measures installed through the program is shown in Figure ES-1. For 2004-05, there were a total of 2,693 participants and 62,474 measures installed through the program. The majority of the measures installed were T8s (84 percent), while most of the remainder (15 percent) were CFLs.

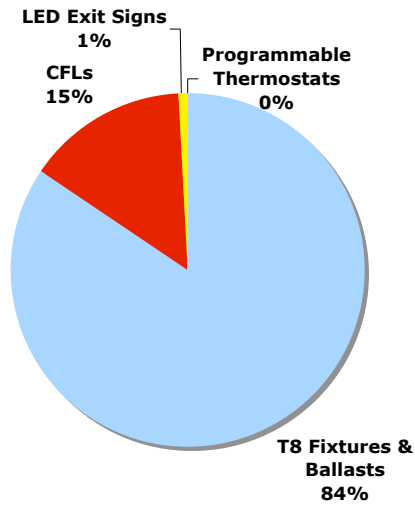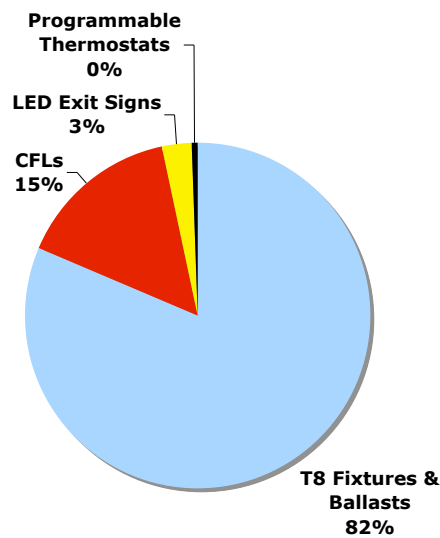**Figure ES-1: Measures Installed Through the SBEC Program**

Figure ES-2 shows the contribution of each measure type to the total *ex post* net energy savings from the program. T8s and CFLs account for 97 percent of the total *ex post* net savings, with savings of 82 percent and 15 percent respectively.

Figure ES-2: Share of Energy Savings

EVALUATION OVERVIEW

The 2004-05 SBEC program evaluation has three primary objectives:

1. **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 include a billing analysis to determine the net *ex post* impacts, an engineering analysis of operating hours and equipment effective useful life (EUL), and a self-report free ridership analysis used to produce net realization rates and report net savings consistent with CPUC's reporting requirements.

2. **Process Evaluation.** The second objective was to evaluate the program implementation process. This was done through interviews with utility program staff in addition to phone surveys of participating and nonparticipating customers. In addition, some of the survey questions are identical to those used in the Express Efficiency evaluation so that responses can be compared. Differences in responses between SBEC and Express Efficiency participants may help support the underlying SBEC program theory.

3. **Measure Customer Satisfaction and Program Influence.** Through the data collection process, the evaluation identified program 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 program can be refined in future years to better meet the needs of the target population. The evaluation also focused on determining the degree to which the program is influencing customer decisions regarding which energy efficient measures they choose to install.

The primary data collection in this evaluation included the following tasks;

- Participant phone survey (601 completes conducted in two stages)

- Nonparticipant phone survey (200 completes)

- On-site verification audits (200 sites conducted in two stages)

- Lighting loggers (25 sites)

Additional evaluation resources were devoted to an engineering review of the *ex ante* savings values used for the program. In particular, the evaluation used information from the on-sites and logger data to review the operating hour and coincident diversity factors and update the savings values used for this program. Information from the primary data collection tasks was also used in a billing analysis to determine the net realized impacts for the program. The analysis tasks and sample sizes are consistent with those in the original EM&V Plan approved by the CPUC for this evaluation.

NET IMPACT ANALYSIS

The information from the engineering analysis and the on-site verifications was incorporated into a net billing model to determine *ex post* net program impacts for the 2004-05 SBEC program. For this model, we utilized the entire population of participants from 2004-05 and matched them to the population of nonparticipants based on industry type (NAICS code) and usage.

To estimate the billing model, several data screens were used to create a dataset with complete billing data and to rule out potential outlier observations that might have undue influence over the model. Specifically, the data screens were designed to remove those observations that had incomplete billing data or did not have sufficient post-installation billing data to estimate annual impacts. In addition, those observations that had disproportionately large estimated savings relative to overall usage were dropped from the analysis, as the large savings (greater than 50 percent of pre-period usage) are likely reflecting errors in the usage data rather than actual impacts given the types of measures promoted by this program.

The number of observations dropped from each of these screens for participants and nonparticipants is shown in Table ES-1. Note that for many of these observations, multiple screening criteria apply. Of the total participant population of 7,860, a sample of 431 remained as regression observations after the screens were applied. The vast majority of the screened participant observations were dropped due to insufficient data (late installation). We therefore do not believe that the large number of screened observations introduced bias into the results. The total number of screened observations and the remaining observations used in the regression are shown at the bottom of the table.

Table ES-1: Observations Dropped Due to Screening Criteria

Type	Part	NonPart
Population	7,860	39,261
Late Installation	6,790	0
Post Usage > 2X Pre Usage	740	8,072
Post Usage > 1.5X Pre Usage	995	9,226
Pre Usage > 2X Post Usage	457	913
Pre Usage > 1.5X Post Usage	698	1,864
Savings > Pre Usage	854	0
Savings > Half of Pre Usage	1,551	0
Missing Usage Data (Pre-Period)	968	9,788
Missing Usage Data (Post-Period)	739	5,728
Variance > 0.35 in Pre-Period	1,507	7,349
Variance > 0.35 in Post-Period	1,428	8,865
Missing Cooling Degree Day Data	5	0
Missing Heating Degree Day Data	5	0
Screened Observations	**7,429**	**28,151**
Regression Observations	**431**	**11,110**

Using data for both participants and nonparticipants, a Statistically Adjusted Engineering (SAE) billing model is estimated using ordinary least squares regression (OLS). In addition to measure savings, the model also includes variables for pre-installation kWh usage, changes in weather, business type, and categorical variables based on kWh usage.

The basic form for the net billing model is as follows:

$$kWh_{i,post} = \beta' Eng + \beta'(kWh_{i,pre}UsageCat) + \beta'(kWh_{i,pre}Business_i) * + \beta'(kWh_{i,pre}Weather) + \varepsilon_i$$

Where :

$\alpha = $ Intercept term

$Eng = $ Ex ante savings estimates adjusted using evaluation findings on operating hours

$kWh_{i,post} = $ Energy usage during the program post – period for customer i

$kWh_{i,pre} = $ Energy usage during the pre – program period

$kWh_{i,pre}UsageCat = $ Energy usage during the pre – program period interacted with kWh usage category

$kWh_{i,pre}Business = $ Energy usage during the pre - program period interacted with business type

$Weather = $ Energy usage during the pre - program period interacted with the change in Heating Degree Days and Cooling Degree Days by climate zones

$\varepsilon_i = $ Random error term assumed normally distributed

$\beta = $ Coefficients to be estimated

The pre-installation usage is interacted with an indicator variable based on annual kWh usage. The various usage categories are defined below in Table ES-2.

Table ES-2: Annual Usage Categories Used in Billing Model

Usage Category	Annual kWh Range	
	Min	Max
1	1,366	5,092
2	5,093	7,148
3	7,149	9,309
4	9,310	12,024
5	12,025	15,960
6	15,961	20,361
7	20,362	27,312
8	27,313	40,977
9	40,978	67,302
10	67,303	321,373

All of the savings variables use the *ex ante* savings values that have been adjusted to account for the lower operating hours (relative to the initial operating hour assumptions) based on the results of the logger lighting study.

Because both participants and nonparticipants are included in the sample, the coefficient estimates on the savings variables can be interpreted as net realization rates since the model accounts for baseline activity that will include at least some installation of measures covered by

the SBEC program. In addition, as discussed above, the savings variables are the *ex ante* gross savings values that have been adjusted using the evaluation findings for operating hours. The combination of these adjustments and the inclusion of nonparticipants in the sample results in the coefficient estimates that reflect the *ex post* <u>net</u> realization rates. Any difference from 1.0 for the resulting coefficient estimates will be reflecting free ridership and/or additional adjustments to realized savings that are not accounted for by the operating hour adjustments. Consequently, the coefficient estimates can be used as an estimate of the *ex post* net realization rate.

Table ES-3 shows the estimation results from the final net billing model specification. The model fits the data well overall as evidenced by the high R-square value and the statistically significant F statistic. A high R-square is common when lag variables are used in regression models, and the high t-value for the pre-usage kWh variables also indicates that the lag usage is an important driver for this model.

The pre-installation kWh variable and the various interaction variables between pre-installation kWh and usage category are all statistically significant at the less than 1 percent level of significance. The magnitude of these coefficients also increases with the size of the usage bin. Of the interaction variables between industry groupings and pre-installation kWh, only two are statistically significant. The variables representing changes in heating degree days and cooling degree days are both negative and statistically significant.

The highlighted variable in Table ES-3 is the coefficient for the savings variables that reflects the estimated savings for all measures. The savings coefficient estimates has the correct sign (negative) and is statistically significant at the less than 1 percent level of significance.

The fact that the savings coefficient estimate is less than 1.0 is reflecting the effect of including a baseline group of nonparticipants in the model.[1] Since nonparticipants are included in the sample the coefficient estimate incorporates any free ridership effects for these measures. The coefficient estimate implies a maximum free ridership rate of about 13 percent assuming that the entire difference from 1.0 is attributable to free ridership and assuming no spillover. This is only slightly higher than the *ex ante* net-gross-ratio assumption of 0.96 that implies a maximum free ridership rate of 4 percent (assuming no spillover). The primary difference, therefore, between the *ex ante* and *ex post* impacts is due to the lower operating hours. As part of this evaluation we also conducted a self-reported free ridership analysis on a measure specific level. The results of this analysis found that self-reported free ridership to be 9 percent for T8s, 11 percent for exit signs, and 21 percent for CFLs. When these results are weighted by the *ex post* net kWh savings accounted for by each measure, the weighted average free ridership is 11 percent.[2] The NTG ratio measured by the net impact analysis is therefore within 2 percent of the weighted self reported free ridership.

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[1] Note that the coefficient estimate for combined savings variable is also not significantly different from 1.0. Nevertheless, we believe that the discussion above is informative.

[2] Since self reported free ridership rates were not measured for thermostats, the savings attributed to this measure were not included in the free ridership weighted by kWh savings.

Table ES-3: Net Billing Regression Model Results

Model Statistics	Value
Observations	11,541
Variables	20
F Statistic	42,470.3
F Statistic Level of Significance	< 1%
Adjusted R-Squared	0.9866

Parameter Estimates	Coefficient	Standard Error	T Statistic	Level of Significance
Savings - All Measures	-0.87	0.178	-4.89	< 1%
Pre Usage*Pre Usage Category 1	1.01	0.06	18.17	< 1%
Pre Usage*Pre Usage Category 2	1.00	0.03	31.80	< 1%
Pre Usage*Pre Usage Category 3	1.00	0.02	43.25	< 1%
Pre Usage*Pre Usage Category 4	0.99	0.02	54.63	< 1%
Pre Usage*Pre Usage Category 5	0.99	0.01	70.80	< 1%
Pre Usage*Pre Usage Category 6	1.00	0.01	91.54	< 1%
Pre Usage*Pre Usage Category 7	0.99	0.01	117.42	< 1%
Pre Usage*Pre Usage Category 8	0.99	0.01	159.46	< 1%
Pre Usage*Pre Usage Category 9	0.99	0.00	219.59	< 1%
Pre Usage*Pre Usage Category 10	0.99	0.00	330.47	< 1%
Pre Usage*Business - Store	-0.009	0.004	-2.51	1%
Pre Usage*Business - Food Service	0.004	0.004	0.92	36%
Pre Usage*Business - Laundry	0.002	0.008	0.3	77%
Pre Usage*Business - Health	-0.002	0.005	-0.33	74%
Pre Usage*Business - Office	-0.004	0.004	-1.15	25%
Pre Usage*Business - Repair	0.005	0.010	0.49	62%
Pre Usage*Business - Manufacturing	0.009	0.004	2.33	2%
Pre Usage*Weather - Change in heating degree days (post-pre)	-0.00002	0.00001	-2.43	2%
Pre Usage*Weather - Change in cooling degree days (post-pre)	-0.00007	0.00003	-2.16	3%

Table ES-4 below summarizes the impact adjustments recommended, by measure, that take into account the results of the billing analysis and operating hour adjustments.

T8s

Tables ES-4 shows the various adjustment factors used to determine the *ex post* net realization rates for T8s. Since the billing regression used savings estimates that had been adjusted for operating hours prior to being input into the model, this adjustment needs to be done to the original *ex ante* gross impacts to be consistent. In addition to the operating hour adjustment, the coefficient estimate from the billing model is used to adjust for free ridership and any additional savings adjustments to realized savings that are not otherwise captured in the model. It should be noted that the ex ante savings estimates do take into account HVAC interactions as documented in the IOU workpapers. Since *ex post* estimates are scalar adjustments of the *ex ante* estimates, they also incorporate the HVAC interaction effects.

The combined effect of these adjustments is an *ex post* net realization rate of 0.50, as shown in the far right column of Table ES-4. Again, the *ex post* net realization rate is the product of all the adjustment factors shown in the table for this measure. Using this rate, the realized <u>net</u> impacts estimated in this evaluation are 50 percent of the original *ex ante* <u>gross</u> impacts assumed by the SBEC program. As discussed, the majority of the change between the *ex ante* and *ex post* impacts is due to the lower operating hours. Once an adjustment is made for operating hours, the

resulting net impacts are generally consistent with the *ex ante* net-to-gross ratio for these measures.

As with any estimate, there is some uncertainty inherent in the *ex post* net realization rate calculation. From the billing model, the final realization rate for the savings variable has a standard error of 0.178, and using this to construct a 90 percent confidence interval around the coefficient estimate results in an error band of +/- 34 percent. Since the billing regression is the primary source of uncertainty in the *ex post* net realization rate for this measure, the 34 percent can be used as a measure of uncertainty in the net realized impacts for T8s as well as the other measures discussed below.

CFLs

For CFLs, a similar process was used to determine the final net impacts. With CFLs, the operating hour adjustment is even more substantial than with T8s. As shown in Table ES-4, the operating adjustment lowers the impact estimate by 59 percent. When this is combined with the billing regression results, the combined effect of these adjustments is an *ex post* net realization rate of 0.36. The 0.36 adjustment is applied to the *ex ante* gross savings to determine the *ex post* net savings for this measure. As with the T8s, the lower operating hours is the primary cause of the reduction and once an adjustment for hours is made the *ex post* net realized impacts are generally consistent with the original *ex ante* net-to-gross ratio.

Exit Signs and Thermostats

Since exit signs and thermostats account for less than 2 percent of the total program savings, no additional research was conducted beyond the net impact analysis to determine NTG ratios for these measures. As a result, the realized net *ex post* impacts for Exit Signs and Thermostats were very close to the original *ex ante* impacts assumed for the program as only the billing regression results are used to adjust impacts. For both measures, the 0.87 percent adjustment factor is used to convert *ex ante* gross impacts to net *ex post* impacts, as shown in Table ES-4.

Table ES-4: *Ex Post* Net Realization Rates for kWh Impacts

Measure	Operating Hours	Billing Analysis Realization Rate	*Ex Post* Net Realization Rate
T8	0.58	0.87	0.50
CFL	0.41	0.87	0.36
Exit Sign	1	0.87	0.87
Thermostat	1	0.87	0.87

2004-05 SBEC Cumulative kWh Impacts

Using the adjustments factors above, the *ex post* net savings numbers are shown below in Table ES-5. The largest reductions from the original *ex ante* gross impacts are in the T8 and CFL categories, which also comprise the majority of the savings. These reductions from the original planning estimates are largely due to the reduced operating hour adjustments based on the logger data.

Note that Table ES-5 shows the change in the *ex ante* and *ex post* <u>net</u> savings, while Table ES-4 shows the change from *ex ante* <u>gross</u> impacts to *ex post* <u>net</u> impacts. For example, for the T8 measure group the *ex post* net impacts are 50 percent of *ex ante* gross impacts (as shown in Table ES-4), for a reduction of 50 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is a 48 percent reduction (as shown in Table ES-5).

Table ES-5: Change in *Ex Ante* and *Ex Post* Net kWh Impacts

Measure	Units Installed	SCE Gross Savings (kWh)	SCE Net Savings (kWh)	Evaluation Net Savings (kWh)	Difference between Evaluation & SCE Net Savings (%)
T8	52,788	7,857,849	7,543,535	3,928,924	-48
CFL	9,082	2,071,256	1,988,405	745,652	-63
LED Exit Sign	531	157,718	151,409	13,721	-91
Thermostat	73	23,871	22,916	2,077	-91
Total	62,474	10,110,693	9,706,265	4,690,375	-52

2004-05 SBEC Cumulative kW Impacts

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table ES-6. In this case, the kW impacts are adjusted to account for changes to the coincident diversity factors and estimated free ridership from the billing analysis. The coincident adjustment factor is based on the logger data and derived load shapes discussed in a later section of this report[3]. The free ridership adjustment is based on the coefficient estimate from the billing analysis and assumes that the entire 13 percent difference from 1.0 is attributable to free ridership.

The *ex post* net realization rate is the product of the adjustment factors shown in Table ES-6. Changes to the coincident diversity factor were based on the operating hours data obtained during the on-site verifications, which includes the logger study. For the coincident diversity factor for CFLs, for example, we used the on-site value of 0.5 and divided it by an original value of 0.79 to get the current adjustment factor of 0.63. When combined with the free ridership adjustment, the total *ex post* net realization rate is 0.55 for CFLs, as shown in the far right column of Table ES-6. A similar calculation is done for T8s to derive an *ex post* net realization rate of 0.76. As mentioned previously, beyond the net impact analysis, no additional research was conducted to adjust the NTG ratio for exit signs and thermostats. The *ex post* net realization rate is therefore equal to the billing analysis free ridership for these measures.

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[3] The loggers used for this study were time of use (TOU) loggers which collected date and time stamps whenever the lights were turned on or off. Load shapes were then derived from this time series data.

Table ES-6: *Ex Post* Net Realization Rates for kW Impacts

Measure	Billing Analysis Free Ridership (1-FR)	Coincident Adjustment Factor	*Ex Post* Net Realization Rate
T8	0.87	0.87	0.76
CFL	0.87	0.63	0.55
Exit Sign	0.87	1	0.87
Thermostat	0.87	1	0.87

The factors shown above were used to calculate the *ex post* kW impacts, as shown in Table ES-7. The largest change from the *ex ante* impacts is for CFLs due to the lower coincident diversity factor derived from the on-site audit load shapes. As with the kWh impact tables, Table ES-6 shows the change from *ex ante* and *ex post* net impacts while Table ES-7 shows the adjustment from *ex ante* gross impacts to *ex post* net impacts.

Table ES-7: Changes in *Ex Ante* and *Ex Post* Net kW Impacts

Measure	Units Installed	SCE Gross Savings (kW)	SCE Net Savings (kW)	Evaluation Net Savings (kW)	Difference between Evaluation & SCE Net Savings (%)
T8	52,788	1,677	1,610	1,275	-21
CFL	9,082	442	424	243	-43
LED Exit Sign	531	18	17	16	-9
Thermostat	73	0	0	0	0
Total	62,474	2,138	2,052	1,534	-25

CONCLUSIONS AND RECOMMENDATIONS

Based on the results presented in this report, we draw the following conclusions for the 2004-05 SBEC program evaluation.

- **Participation satisfaction with the SBEC program is very high.** In general, participants are very satisfied with the program overall, with the vast majority of respondents (85 percent) rating their satisfaction at an 8 or higher on a 10 point scale. In addition, participants also expressed high levels of satisfaction with the audit and equipment installation process. SBEC participants also expressed greater satisfaction with the program overall than did the 2003 Statewide Express Efficiency program participants.

- **Participation barriers for renters are being overcome by the SBEC program.** Renters comprise 71 percent of SBEC participants, which is much higher than the 51 percent observed for SCE's territory for the 2003 Express Efficiency program. Participant survey responses indicate that common barriers such as concern over bill savings and the potential hassle of obtaining a utility rebate are more pronounced for renters than building owners in the program. The fact that so many renters are participating in the program despite these concerns indicates that the current SBEC program has been very effective in addressing these issues.

- **The program has been successful in reaching non-English speaking customers.** Of the participants surveyed, 70 percent spoke a language other than English at their

business. A portion of these were spoken to by the CBO or FBO in a language other than English, and 74 percent indicated that this was very important in their decision to participate.

- **Renters may have more influence over building energy decisions than originally assumed.** While most of the participants in the program rent their facilities, they still have a high level of involvement in the equipment decisions at the facility. Most renters (64 percent) indicated that they needed to get the building owner's permission before making energy efficiency improvements. Nevertheless, 58 percent of renters strongly disagreed with the statement they would not be at the location long enough to benefit from energy efficient investments. Most renters (54 percent) also strongly disagreed with the statement that it was not worth investing in energy efficiency because they did not own the building.

- **CBO/FBO involvement in the SBEC is also very important.** In our survey sample, 173 participants (29 percent) were recruited to the program by a CBO or FBO. Of these, 89 percent said that the CBO/FBO they worked with was very knowledgeable about the program and 84 percent indicated that they were very satisfied with their CBO/FBO.

Based on these conclusions, we offer the following recommendations for the SBEC program:

- **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. Furthermore, respondents in the nonparticipant survey indicated that they would be much more likely to participate in a direct install program offered by SCE compared with a rebate program. As long as the high satisfaction levels can be maintained and net savings are achieved, we see no reason why the current program design should be modified.

- **CFL EUL values need to be drastically reduced.** The current SBEC program uses a 16-year EUL for CFL lamps, as this was the value submitted and approved in the Program Implementation Plan. This is undoubtedly too high as it is twice the 8 year EUL commonly assumed for CFLs in other commercial programs. Furthermore, the logger data collected in this evaluation indicates that the EUL is significantly lower than even the previously recommended value of 8 years. Based on the adjusted annual operating hours (1881 hrs/year), and the average manufacturers EUL for the CFLs recorded as part of the logger study (8321 hrs/lamp), we recommend that the CFL EUL be changed to 4.4 years for SBEC participants.

- **Operating hour assumptions need to be revised for T8s and CFLs.** The current assumptions for annual operating hours are much higher than those derived from the logger data verification on-site survey data. Once an operating hour adjustment is made, the realized net impacts are consistent with the *ex ante* values. This result was confirmed in the billing analysis, where the net realization rate for the combined savings variable (predominantly T8s and CFLs) was approximately the same as the *ex ante* net-to-gross ratio assumption once the adjustment for operating hours was made.

- **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 T8s and CFLs are higher than the results derived in the SBEC evaluation. 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 logger sites in the SBEC 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 T8s and CFLs.

- **Coincident diversity factor should be modified for CFLs and T8s.** The results of on-site verifications and the logger study produced load shapes that show a lower coincident diversity factor than that currently assumed for the program for both CFLs and T8s. This results in significantly lower kW impacts than originally anticipated for these measures.

1. INTRODUCTION

SBEC PROGRAM BACKGROUND

The Southern California Edison (SCE) Non-Residential Hard-to-Reach Program, also known as the Small Business Energy Connection (SBEC) Program, is designed to produce cost-effective, long term demand and energy savings by providing no-cost energy-efficient equipment retrofits to small and very small business customers in SCE's service territory. Small and very small business customers often lack information about the benefits of energy efficiency improvements, and do not take advantage of energy savings opportunities due to limited resources for purchasing and installing equipment with higher start-up costs. Furthermore, since the majority of these customers rent their business space, there is a split incentive barrier that hinders the adoption of energy efficiency improvements. The SBEC program addresses these barriers by providing no-cost energy-efficient retrofits, and is intended to stimulate long term change in customers' knowledge and behavior regarding energy-efficient business improvements.

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The SBEC Program serves the entire SCE service territory and targets underserved communities in partnership with Los Angeles County Office of Small Business and selected community based organizations (CBOs) and faith based organizations (FBOs). The CBOs and FBOs conduct their activities through a performance-based contract with SCE, and are uniquely positioned to understand the needs of their community and develop customized program delivery plans. The CBOs and FBOs that participate in the SBEC program are:

- CHARO Community Development Corporation

- First African Methodist Episcopal (FAME) Church Renaissance, and

- Titan Foundation

During the 2004-05 period there were 2,693 participants in the SBEC Program. Figure 1 shows the distribution of participants across general business sectors based on SCE's NAICS code classification[4]. Participants are fairly well distributed among the different industry sectors that are shown.

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[4] 500 participants were missing NAICS information and are not represented in the figure.

Figure 1: Business Sectors Participating in SBEC Program
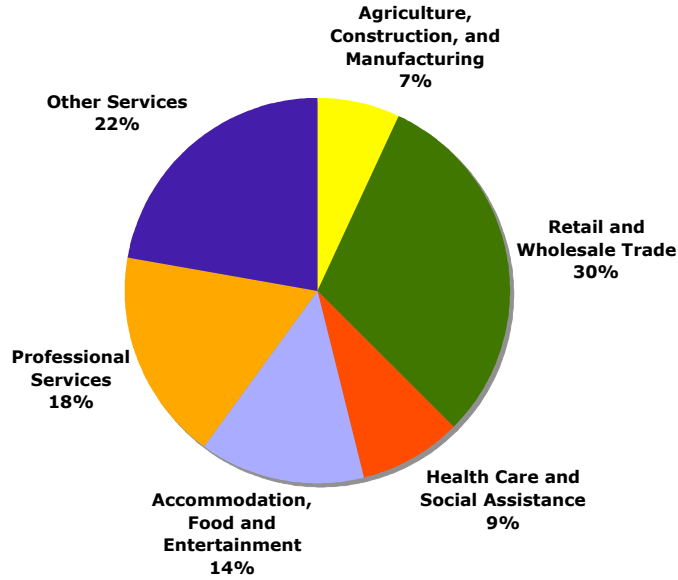
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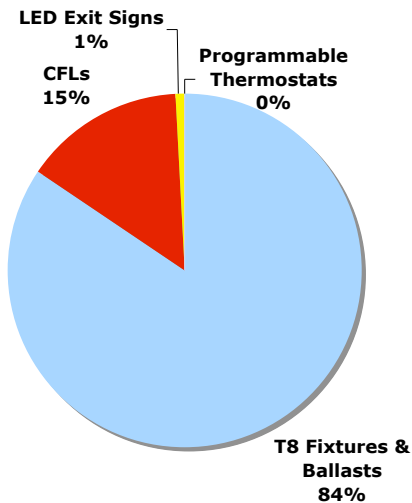
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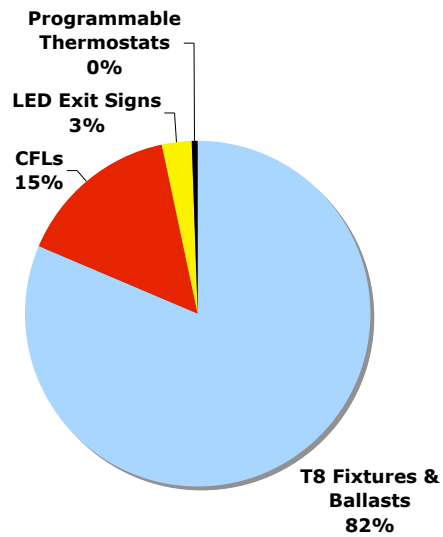
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EVALUATION OVERVIEW

The 2004-05 SBEC program evaluation has three primary objectives:

1. **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 include a billing analysis to determine the net *ex post* impacts, an engineering analysis of operating hours and equipment effective useful life (EUL), and a self-report free ridership analysis used to produce net realization rates and report net savings consistent with CPUC's reporting requirements.

2. **Process Evaluation.** The second objective was to evaluate the program implementation process. This was done through interviews with utility program staff in addition to phone surveys of participating and nonparticipating customers. In addition, some of the survey questions are identical to those used in the Express Efficiency evaluation so that responses can be compared. Differences in responses between SBEC and Express Efficiency participants may help support the underlying SBEC program theory.

3. **Measure Customer Satisfaction and Program Influence.** Through the data collection process, the evaluation identified program 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 program can be refined in future years to better meet the needs of the target population. The evaluation also focused on determining the degree to which the program is influencing customer decisions regarding which energy efficient measures they choose to install.

The primary data collection in this evaluation included the following tasks;

- Participant phone survey (601 completes conducted in two stages)

- Nonparticipant phone survey (200 completes)

- On-site verification audits (200 sites conducted in two stages)

- Lighting loggers (25 sites)

Additional evaluation resources were devoted to an engineering review of the *ex ante* savings values used for the program. In particular, the evaluation used information from the on-sites and logger data to review the operating hour and coincident diversity factors and update the savings values used for this program. Information from the primary data collection tasks was also used in a billing analysis to determine the net realized impacts for the program. The analysis tasks and

sample sizes are consistent with those in the original EM&V Plan approved by the CPUC for this evaluation.

Additional detail on each of the evaluation analysis methods is presented later in the report.

The remainder of this report is organized as follows. The *Analysis and Results* section discusses the analysis methods and major findings of the evaluation. This includes the results of the participant and nonparticipant phone surveys, the on-site verifications, the engineering analysis, and the net billing model. Evaluation conclusions and recommendations are summarized at the end of this section. The participant and nonparticipant phone survey instruments are included as an appendix to this report following the *Analysis and Results* section.

3. ANALYSIS AND RESULTS

PROGRAM THEORY AND SURVEY DESIGN

To develop the participant survey instrument, we interviewed SBEC 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 SBEC program theory:

- The small businesses targeted by the SBEC Program 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 SBEC program and therefore utility sponsorship is important for gaining customer trust. In addition, partnering with CBOs and FBOs also helped gain customer trust and increase participation.

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 CBO/FBO sponsorship of the SBEC program

- 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 that SBEC customers rent their buildings and have little or no influence over equipment changes that will affect energy use.

In addition to the program theory issues, the survey was also used to collect process-related information, such as satisfaction with their new equipment and the program participation processes. The survey was also used to conduct a phone verification of the measures installed and to recruit participants for the on-site audits.

Quantum Consulting fielded the participant survey in two waves, the first in late 2005 and the second wave in early 2006. The two waves had a combined result of 601 completed participant surveys from a participant population of 2,693 during the 2004-5 period. Participants were randomly selected from this population and the sample was not stratified. The survey took about 15 minutes to complete on average.

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. With a 2004-05 participant population of 2,693, achieving a relative precision goal of "90/10" requires a sample size of about 65 under the most conservative sampling assumptions. Our final participant survey sample of 601 easily exceeds this criterion.

With all survey questions, 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 both the participant and nonparticipant surveys. 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.

PARTICIPANT SURVEY RESULTS

The tables in this section show the combined results from both waves of the participant survey. Additional survey results on free-ridership, installation verification, and the importance of utility sponsorship are provided in the *Savings Verification* section of this report.

Firmographic Information

The following tables provide firmographic information for the 2004-05 SBEC participants. Table 1 shows the building size for the participants included in the survey sample. Most respondent businesses occupy a fairly small businesses space of 2,500 square feet or less, with 53 percent of participants in this category. With an additional 23 percent in the 2,500 to 5,000 square foot

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range, the vast majority of participants (76 percent) have business space of less than 5,000 square feet, which is consistent with the small business category targeted by the SBEC Program.

Table 1: Participant Building Size

Response (n = 601)	% Of Respondents
Less than 2,500 square feet	53%
2,500 to 5,000 square feet	23%
5,000 to 10,000 square feet	10%
10,000 to 20,000 square feet	5%
20,000 to 50,000 square feet	2%
50,000 to 100,000 square feet	0%
Don't know	7%

F1: Can you estimate the total square footage of your facility at the address?

Table 2 shows the number of employees for each business and these results mirror the square footage results shown in the previous table. Most participating businesses have 5 or fewer employees (63 percent), and 85 percent have 10 or fewer employees.

Table 2: Participant Number of Employees

Response (n = 601)	% Of Respondents
1 to 5	63%
6 to 10	22%
11 to 20	8%
21 to 50	5%
51 to 100	1%
More than 100	0%

F5: Which of the following best describes the number of employees your firm has at this address?

The business types of the participants we surveyed is shown in Table 3, and the responses indicate that the program is reaching a wide variety of businesses. The most common types include non-food retail (25 percent) and office (22 percent), while industrial/manufacturing and personal services are also relatively common business types at 17 and 11 percent respectively.

Table 3: Participant Business Type

Response (n = 601)	% Of Respondents
Retail	25%
Office	22%
Industrial/Manufacturing	17%
Personal Services	11%
Health Care/Hospital	7%
Other	18%

F15: What is the main activity at your business?

Seventy percent of the respondents indicated that a language other than English is also spoken at their business. Table 4 shows that Spanish is the most common second language spoken with 60 percent of the response, followed by Chinese with 31 percent. In comparison, the results of the Express Efficiency evaluation in 2003 showed that 60 percent of SCE's participants in that program also spoke a second language. This indicates that the SBEC program may be more successful in its efforts to serve this market than the Express Efficiency program.

Table 4: Primary Non-English Language Spoken at Participant Business

Response (n = 422)	% Of Respondents
Spanish	60%
Chinese	31%
Vietnamese	4%
Other	5%

L10: Other than English, what language is primarily spoken at your business?

Table 5 shows building ownership status for program participants. As expected, most of the businesses (71 percent) rent rather than own their building. This result is significantly different than that observed for Express Efficiency. In 2003, only 51 percent of SCE respondents were renters. This shows that the SBEC is clearly overcoming barriers to participation for renters, and as is discussed subsequently, this is likely due to the program's success in addressing a variety of barriers (i.e., perceived hassle factor, financing, split incentives, etc.) that are common or more pronounced for renters relative to building owners.

Table 5: Participant Building Ownership

Response (n = 601)	% Of Respondents
Lease or rent	71%
Own	28%
Don't know	1%

R5: Does your business own or lease the facility?

Table 6 shows the role that participants play in making lighting and climate control equipment decisions for their building. A surprising number of businesses say that they play an active role in these decisions, with 40 percent indicating that they are very active and 34 percent being at least somewhat active. This is an encouraging result, and suggests that even while most businesses are leasing their facility, they still have a role in the equipment choices that affect their electricity bills. This also contradicts one of the program theory elements, which suggests that renters are not involved in energy management decisions since they do not own the building they occupy (i.e. the split incentives barrier).

Table 6: Participant Business Role in Energy Decisions

Response (n = 601)	% Of Respondents
Very active	40%
Somewhat active	34%
Slightly active	16%
Not at all active	9%

R1: How active a role does your business take in making lighting and climate control equipment purchase decisions at this facility?

Table 7 shows participants' knowledge of energy efficient products prior to participating in the program. Although 32 percent of the respondents had little knowledge of energy efficiency products, 67 percent indicated that they are at least somewhat knowledgeable (the average rating was 4.7 on a scale of 1 to 10). Renters generally indicated the same level of knowledge as respondents that owned their buildings. This contradicts the common assumption that renters are not motivated to learn about equipment options that may help reduce their energy bills.

Table 7: Participant Prior Knowledge of Energy Efficiency Products

Response (n = 469)	% Of Respondents
Fully knowledgeable	12%
Somewhat knowledgeable	55%
Not at all knowledgeable	32%

PE33: Using a scale from 1 to 10, where 1 means you aren't knowledgeable and 10 means you are fully knowledgeable, how knowledgeable were you about energy efficiency products before participating in the Small Business Energy Connection Program?

Note: Respondents gave ratings on a 1 to 10 scale, and these were categorized so that 8 to 10 denotes "fully knowledgeable", 4 to 7 denotes "somewhat knowledgeable", and 1 to 3 denotes "not at all knowledgeable".

Participation Process

Table 8 shows the participants' awareness levels of energy efficiency programs other than the SBEC program. In general, awareness levels are low, as 85 percent of the respondents were not aware of any other programs. Only 6 percent were generally aware that there are rebate programs available, although they did not mention a specific program. These results are consistent with the program theory that the target businesses are generally unaware (or uninterested) in the various efficiency program options that are available.

Table 8: Participant Awareness of Other Energy Efficiency Programs

Response (n = 601)	% Of Respondents
Not aware of any other programs	85%
Rebate (unspecified)	6%
Business energy audits	4%
Other/don't know	5%

A41: Besides the Small Business Energy Connection Program, are you aware of other programs or resources provided by SCE that are designed to promote energy efficiency for businesses like yours?

Table 9 shows the participants' source of awareness of the SBEC program. About half of the participants first became aware of the program through the audit process or from an unscheduled visit by an unspecified person, which is consistent with the low levels of awareness of efficiency programs shown in the previous table. Additional sources of awareness include flyers or mail and the CBOs/FBOs, but these have had less of an impact than personal visits.

Table 9: Source of SBEC Program Awareness

Response (n = 601)	% Of Respondents
From the technician that did the audit	27%
Walk-in (unspecified person)	23%
Flyer/mail	9%
SCE representative	9%
TITAN Foundation	6%
CHARO Community Development Corporation	5%
Other business/word of mouth	5%
First African Methodist Episcopal	4%
Phone solicitation	4%
Other	2%
Don't know	5%

A25: How did you first become aware of the Small Business Energy Connection Program?

Table 10 shows the reasons respondents gave for participating in the program (participants were allowed to select multiple responses). Not surprisingly, responses related to saving money on electricity bills (73 percent) and receiving free lighting equipment (39 percent) comprised the largest share of these responses.

Table 10: Reasons for Participation

Response (n = 601)	% Of Respondents
Saving money on electric bills	73%
To receive free lighting and other equipment	39%
Conserve energy	28%
Brighter lights/better quality	9%
Replacing old or broken equipment	9%
Energy crisis	6%
Acquiring the latest technology	6%
Helping protect the environment	3%
Recommended by neighboring business or friend	1%
Because the program was sponsored by SCE	1%
Other	2%

A45: Why did your company participate in the Small Business Energy Connection Program?

Among the respondents that were recruited by the CBOs, 92 percent said that CBO staff explained the *entire* program participation process to them, and 95 percent said that the program information was *clearly* presented by the CBO. Furthermore, Table 11 shows that 89 percent of these respondents considered the CBO to be very knowledgeable about the program. All of these results indicate that the CBOs have performed well during their recruitment efforts and have been instrumental in increasing program participation.

Table 11: CBO Knowledge of Program

Response (n = 169)	% Of Respondents
Very knowledgeable	89%
Somewhat knowledgeable	7%
Not very knowledgeable	1%
Don't know	4%

A38: How knowledgeable was the CBO about the program, were they …?

Among these same respondents, 30 businesses indicated that the CBO spoke with them about the program in a language other than English. As shown in Table 12, 73 percent of these 30 businesses said that this was very important in their decision to participate, and only 13 percent did not value these extra communication efforts by the CBOs.

Table 12: Importance of CBO Communicating in Non-English Language

Response (n = 30)	% Of Respondents
Very important	73%
Somewhat important	13%
Not very important	13%

A40: If the CBO talked to you about the program using a language other than English) How important was this on your decision to participate, was it…?

Satisfaction

The following tables show participant satisfaction with the various SBEC program elements. Table 13 shows participant satisfaction with the program overall. In general, participant satisfaction is extremely high with 85 percent indicating that they were very satisfied with the program and 14 percent being at least somewhat satisfied with the program. This satisfaction level is higher than that reported for the 2003 Statewide Express Efficiency Program, where 74 percent of SCE's Express participants reported being very satisfied with the overall program.

Satisfaction levels were slightly lower (but still very high) for the audit process, with 74 percent being very satisfied and 20 percent being somewhat satisfied. As shown in the far right column, almost all participants (84 percent) were very satisfied with the equipment installation process.

Table 13: Program Satisfaction

Response (n = 601)	Program Overall (%)	Bill Savings (%)	Audit Process (%)	Installation Process (%)
Very satisfied	85%	42%	74%	84%
Somewhat satisfied	14%	31%	20%	15%
Not at all satisfied	1%	5%	1%	1%
Refused/don't know	0%	21%	5%	0%

SAT1: What is your satisfaction with the …?

Participants were least satisfied with their bill savings, and only 42 percent indicated that they were very satisfied. In addition, there were a larger percentage of respondents in the Refused/Don't Know category compared to the other questions, which means that respondents have particular difficulty determining if they have saved money on their bills. Table 14 shows that among respondents that were not at all satisfied with their bill savings, the most common reason (unsurprisingly) was that they have not perceived any monetary savings.

Table 14: Reasons for Dissatisfaction with Bill Savings

Response (n = 31)	% Of Respondents
No savings	84%
Other	13%
Don't know	3%

SAT1: Why did you give a rating of Not at all Satisfied?

Table 15 shows participant satisfaction with the installation workers, and shows that the vast majority (85 percent) was very satisfied with the work done by the installers. Among the few respondents that expressed dissatisfaction with the installation process or workers, the most frequently cited problem was that they "made too much mess" (although only 7 respondents said this).

Table 15: Satisfaction with Installation Workers

Response (n = 601)	% Of Respondents
Very satisfied	85%
Somewhat satisfied	12%
Not at all satisfied	2%

SAT36: What is your satisfaction with the workers that performed the installation?

Table 16 shows that among participants that were recruited by the CBOs, 84 percent were very satisfied with the overall performance of the CBO they interacted with. This is consistent with findings presented previously, where participants gave high ratings for the CBOs' knowledge of the program, comprehensive and clear presentations, and willingness to communicate in languages other than English.

Table 16: Overall Satisfaction with the CBO

Response (n = 173)	% Of Respondents
Very satisfied	84%
Somewhat satisfied	12%
Not at all satisfied	1%
Don't know	3%

SAT38: How satisfied were you with the CBO?

Table 17 provides additional information on participants' satisfaction with the lighting equipment that was installed. Across all categories, satisfaction levels were extremely high, with 84 percent very satisfied with the installed CFLs, 93 percent very satisfied with the installed exit signs and sensors, and 90 percent very satisfied with their new T8s. SBEC participants were also more satisfied with their equipment and its performance than the 2003 Express Efficiency participants. Overall, 73 percent of SCE's Express participants reported being very satisfied with the installed equipment and its performance.

Table 17: Satisfaction with Installed Equipment

Response (n = 601)	CFLs (%)	Exit Signs and Sensors (%)	T8 (%)
Very satisfied	84%	93%	90%
Somewhat satisfied	11%	2%	8%
Not at all satisfied	4%	0%	1%
Refused/don't know	1%	4%	1%

A20_SAT1, SAT2, SAT3: How satisfied have you been with the performance of the …?

Future Purchase Intentions

The SBEC program has had a positive influence on possible future measure installations, as shown in Table 18 and the following tables. Almost all respondents indicated that they are now more likely to install energy efficient products due to their experience participating in the SBEC program. That said, questions relating to future intentions also have the potential to be biased in favor of the program, as some respondents may provide answers that they believe are more socially desirable rather than reporting their true future intentions. It is possible that these results may overestimate the positive influence of the SBEC program on future equipment installations.

(This potential issue of "false response bias" also applies to subsequent tables that relate to the potential influence of the SBEC program on future purchases.)

Table 18: Influence of SBEC Program on Future Measure Installations

Response (n = 601)	% Of Respondents
More likely	90%
Same	5%
Less likely	2%
Don't know	3%

PE 11: Are you more or less likely to install energy efficient products as a result of your experience with the program?

Table 19 shows the responses to a similar question focusing on future CFL replacements. Of the 339 participants that had CFLs installed through the SBEC program, 90 percent indicated that they intend to replace burned-out CFLs with new CFLs in the future. Furthermore, among respondents that plan to install CFLs in the future, 73 percent indicated that the SBEC program was very influential in their decision, and 19 percent said it was somewhat influential.

Table 19: Future CFL Replacement Intentions

Response (n = 339)	% Of Respondents
CFLs	90%
Incandescent	4%
Both	0%
Don't know	5%

PE 13: When your CFLs burn out or fail, will you replace them with CFLs or incandescent lamps?

Table 20 shows the importance of free installation on future CFL installations. Among customers that received CFLs through the program and who plan to install them in the future, 69 percent also indicated that they would continue to use CFLs even if SCE did not pay for them. While these types of stated preference questions are notoriously imprecise for determining exact installation intentions, the generally high positive response rate does indicate a positive influence of the program and suggests that the program is having some participant spillover effect.

Table 20: Effect of Rebate on Future CFL Replacement Intentions

Response (n = 307)	% Of Respondents
Yes	69%
No	24%
Don't know	7%

PE 14: What if SCE did not pay for any of the cost to install the CFLs? Would you still install CFLs?

Market Barriers

Table 21 shows the results of multiple survey questions designed to obtain information on potential market barriers to energy efficient investments. 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 on a 1 to 10 scale, where 1 = "Completely Disagree" and 10 = "Agree Completely". Scores of 8 to 10 were grouped to signify "Strongly Agree", scores of 4 to 7 = "Agree Somewhat", and 1 to 3 = "Strongly Disagree".

The statement "actual bill savings will be less than estimated" received the highest level of agreement among the questions (average score of 6.7), with 44 percent strongly agreeing and 33 percent agreeing somewhat. In contrast, only 17 percent of respondents strongly disagreed with the statement on bill savings. This is not surprising, considering that bill savings also received the lowest satisfaction ratings among the various program elements (e.g., audit, installation), as described earlier. There was also a higher level of agreement with the statement "lack of financing is a barrier to our organization" (average score of 5.9). Thirty-four percent of the respondents strongly agreed with this statement, and 37 percent agreed somewhat. This suggests that initial installation costs may remain a hurdle for many business 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 regarding whether or not they had enough information to make informed energy decisions, and gave an average score of 5.5; the highest percent of respondents (40 percent) gave a "neutral" score in the 4 to 7 range. Similarly, the respondents were generally split regarding the statement "there is too much time and hassle involved in selecting a qualified energy efficiency contractor", and gave an average score of 5.4. Respondents disagreed more strongly with the statement that "getting a utility rebate is too much hassle", by giving an average score of 4.5.

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. As was discussed earlier, 71 percent of the respondents lease or own their business. Among this group, 64 percent agreed strongly or somewhat that they must consult with the business owner before making improvements.

In comparison, 58 percent of business renters strongly disagreed with the statement "I won't be at this location long enough to benefit from making these investments." Similarly, 54 percent of business renters strongly disagreed with the statement "It's not worth investing because it's not my building". Both of these results contradict the program assumptions that businesses that lease their facilities are not interested in making energy efficient investments to their buildings.

Table 21: Participant Perceptions of Market Barriers

Response (n = 601)	Strongly Agree (%)	Agree Somewhat (%)	Strongly Disagree (%)	Don't Know (%)	Average Score
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than estimated.	44%	33%	17%	4%	6.7
I don't have the information I need to make an informed decision about energy efficient investments.	29%	40%	28%	2%	5.5
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	29%	28%	30%	12%	5.4
Lack of financing is a barrier to our organization making energy efficient investments that we want to make.	34%	37%	25%	4%	5.9
Getting a utility rebate is too much hassle.	21%	25%	40%	13%	4.5
I need the owner's consent to make improvements. *	47%	17%	34%	2%	6.0
I won't be at this location long enough to benefit from making these investments. *	19%	20%	58%	3%	3.7
It's not worth investing because it's not my building. *	19%	26%	54%	1%	3.9

PE35A-H: Using a scale from 1 to 10, where 1 means you strongly disagree and 10 means you agree strongly, how much do you agree with the following statements?

Note: Respondents gave ratings on a 1 to 10 scale, and these were categorized so that 8 to 10 denotes "Strongly Agree", 4 to 7 denotes "Agree Somewhat", and 1 to 3 denotes "Strongly Disagree".

* Results shown for business renters only (n = 428)

Table 22 shows the results for questions where the responses of building owners and renters differed the most. Note that this table shows the percent of each group that "Strongly Agrees"

with each statement. Renters tend to be more concerned that bill savings may not materialize than are building owners. Forty-nine percent of renters "Strongly Agreed" compared to 37 percent of owners. Similarly, renters were also more likely to agree than owners that getting a utility rebate is too much of a hassle. Despite these concerns, there are a large number of renters participating in the current SBEC program, which indicates that the program has been effective in addressing these barriers.

Table 22: Comparison of Owner and Renter Strongly Agree Responses

Response (n = 601)	Renter (%)	Owner (%)
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than estimated.	49%	37%
Getting a utility rebate is too much hassle.	25%	16%

NON-PARTICIPANT SURVEY RESULTS

In addition to the participant survey, a non-participant survey was fielded to collect information from 200 small business customers that had not participated in the program. The purpose of this survey was to understand non-participants' attitudes and perceptions about energy efficient technologies and energy conservation programs. Where applicable, this information is compared to the participant survey results to guide future program refinements and to gain insights into program effectiveness.

The non-participant survey lasted about 15 minutes and was fielded by Quantum Consulting in early 2006. The survey sample was chosen to include a random sample of small business customers in the same industries as the current participants (based on NAICS code). Other than creating a sample pool of similar industries and rate classes, no stratification was done for the non-participant survey sample.

Key findings from the non-participant survey are presented below. For certain questions the participant responses are shown beside the non-participant responses for comparison purposes.

Firmographic Information

The following tables provide firmographic information about program non-participants. Table 23 shows the building size of the non-participants included in the survey sample. Thirty-nine percent of the businesses occupy a very small space of 2,500 square feet or less, and an additional 20 percent occupy a space in the 2,500 to 5,000 square foot range. As shown in Table 23, the participant sample contains a higher percentage of smaller businesses compared to the non-participant sample.

Table 23: Non-Participant Building Size

Response (n = 200)	% Of Non-Participant Respondents	% Of Participant Respondents
Less than 2,500 square feet	39%	53%
2,500 to 5,000 square feet	20%	23%
5,000 to 10,000 square feet	17%	10%
10,000 to 20,000 square feet	11%	5%
20,000 to 50,000 square feet	9%	2%
50,000 to 100,000 square feet	1%	0%
Don't know	3%	7%

F1: Can you estimate the total indoor square footage of your facility at this location? Is it…

Table 24 shows the number of employees for non-participating businesses. Most businesses have 5 or fewer employees (58 percent), and 74 percent have 10 or fewer employees. This is fairly similar to the composition of SBEC program participants, where 85 percent of businesses have 10 or fewer employees.

Table 24: Non-Participant Number of Employees

Response (n = 200)	% Of Non-Participant Respondents	% Of Participant Respondents
1 to 5	58%	63%
6 to 10	16%	22%
11 to 20	13%	8%
21 to 50	8%	5%
51 to 100	3%	1%
More than 100	1%	0%
Don't know	1%	0%

F5: Which of the following categories describes the number of employees your firm has at this location?

The business types of the non-participants we surveyed is shown in Table 25. The most common business types include industrial/manufacturing (20 percent) and office (17 percent), while non-food retail and warehousing are also relatively common business types at 16 and 11 percent respectively. In comparison, non-food retail comprised the largest share (25 percent) of program participants.

Table 25: Non-Participant Business Type

Response (n = 200)	% Of Non-Participant Respondents	% Of Participant Respondents
Industrial/Manufacturing	20%	17%
Office	17%	22%
Retail	16%	25%
Warehouse	11%	-
Personal Services	8%	11%
Health Care/Hospital	7%	7%
Other	21%	18%*

F15: What is the main activity at your business?

*For the participant survey results, the "Warehouse" business type is included in the "Other" category.

Sixty percent of the respondents indicated that a language other than English is also spoken at their business. Table 26 shows that Spanish is the most common second language spoken by non-participant respondents and participant respondents, followed by Chinese (respondents could list more than one language).

Table 26: Primary Non-English Language Spoken at Non-Participant Business

Response (n = 119)	% Of Non-Participant Respondents	% Of Participant Respondents
Spanish	72%	60%
Chinese	33%	31%
Vietnamese	5%	4%
Japanese	3%	-
Other	3%	5%*

L10: Other than English, what languages are spoken to conduct business at your facility?

*For the participant survey results, Vietnamese, Japanese, and Mandarin are included in the "Other" category.

Table 27 shows building ownership status for program non-participants, and shows that the majority of businesses (58 percent) rent rather than own their building. In comparison, 71 percent of program participants rent their business space, which again confirms that the SBEC program is doing a good job of targeting the renter market.

Table 27: Non-Participant Building Ownership

Response (n = 200)	% Of Non-Participant Respondents	% Of Participant Respondents
Lease or rent	58%	71%
Own	41%	28%
Don't know	1%	1%

R5: Does your business own or lease the facility?

Table 28 shows the role that non-participants play in making lighting and climate control equipment decisions for their building. Forty-four percent of respondents indicated that they are very active in these decisions, and 20 percent are at least somewhat active. Compared to program participants, greater shares of non-participants are either very active or not active at all.

Table 28: Non-Participant Business Role in Energy Decisions

Response (n = 200)	% Of Non-Participant Respondents	% Of Participant Respondents
Very active	44%	40%
Somewhat active	20%	34%
Slightly active	18%	16%
Not at all active	18%	9%

R1: How active a role does your business take in decisions for purchasing lighting and climate control equipment at this facility? Would you say you are…

Past Energy Conservation Activities

Table 29 shows how many non-participants have replaced old equipment with high efficiency equipment similar to SBEC program measures. Twenty-five percent indicated that they had replaced incandescent bulbs with CFLs sometime since January 2002, and 25 percent had replaced T12 tube fixtures with T8s. Other installations may have also occurred prior to January 2002, but the questions were limited to the previous four years to minimize the potential for response error.

Table 29: Non-Participant High Efficiency Equipment Replacement

Response (n = 200)	Yes (%)	No (%)	Don't Know (%)
Replaced incandescent bulbs with compact fluorescent screw-in or hardwired bulbs?	25%	75%	0%
Replaced long T12 fluorescent tube fixtures with slimmer, more energy efficient T8 fluorescent tube fixtures?	25%	72%	4%
Added lighting sensors?	11%	89%	0%
Replaced old exit signs with energy efficient LED exit signs?	5%	94%	1%

E5_1 to 4: Since January 2002, have you…..?

Table 30 shows the percent of incandescent bulbs that were replaced by CFLs for non-participants that had made a lighting change. Among these non-participants, 50 percent had replaced 100 percent of their bulbs with CFLs and 30 percent replaced up to 50 percent of their bulbs with CFLs.

Table 30: Non-Participant CFL Replacement

Response (n = 50)	% Of Respondents
1% to 25%	8%
25% to 50%	22%
51% to 75%	8%
76% to 99%	12%
100%	50%

CFL2: What percent of the incandescent bulbs at your business did the CFLs replace?

Sixty-nine percent of the non-participants had taken additional energy conservation actions since January 2002, and these actions are shown in Table 31 (respondents could list more than one action). The most common energy saving activity was to turn off lights (75 percent), followed by setting thermostats to reduce heating and cooling loads (37 percent) and turning off office equipment when not being used (22 percent).

Table 31: Non-Participant Conservation Activities

Response (n = 137)	% Of Respondents
Turn off lights not being used	75%
Set thermostats lower when heating/higher when using air conditioning	37%
Turn off office equipment when not in use	22%
Use air conditioning only when necessary	15%
Install timer	6%
Delamping	4%
Install timers on appliances	4%
Install additional energy efficient lighting	3%
Purchase thermostat	3%
Schedule high electrical energy-use processes during off-peak periods	2%
Install separate switches for closet and office lights	2%
Wear comfortable clothes - dress appropriately for warmer weather	2%
Cover windows	2%
Turn off computer if out of the office for more than a few minutes	2%
Set computer to low power standby mode	2%
Turn off personal appliances (e.g., coffee pot)	1%
Trade in photocopiers for smaller, more efficient energy efficient models	1%
Caulk and weather-strip doors and windows	1%
Maintenance of equipment	1%
Reduce hot water temperature	1%
Set air conditioning thermostats to pre-cool spaces at off-peak times	1%
Use fans for cooling	1%
Purchase other energy efficient equipment	1%

CON5: What energy conservation actions have you taken since January 2002?

Table 32 shows the main motivations that non-participants had for taking energy conservation actions (respondents could list more than one reason). Not surprisingly, 85 percent of the non-participant respondents stated that the primary reason for trying to conserve energy was to reduce their energy costs. The second most mentioned reason, with 31 percent, was to mitigate a perceived energy crisis (as a matter of civic duty).

Table 32: Non-Participant Reasons for Energy Conservation Actions

Response (n = 137)	% Of Respondents
Lower energy (operating) cost	85%
Energy crisis – civic duty	31%
Help avoid blackouts	5%
There weren't any reasons	2%
Comfort	2%
Save energy	2%
Expansion	1%
Shift load to off-peak hours	1%

CON30: What were the most important reasons that you took energy conservation actions to reduce your energy use?

Energy Efficiency Program Awareness and Market Barriers

Table 33 shows that 37 percent of the non-participants were aware of the SBEC program. Of those that were aware of the SBEC Program, 40 percent (15 percent of all respondents) had been approached by a program contractor to do an energy audit.

Table 33: Non-Participant Awareness of SBEC Program

Question	Yes (%)	No (%)	Don't Know (%)	n
A1: Are you aware of SCE's Small Business Energy Connection Program?	37%*	62%	1%	200
A3: Have you ever been approached by a contractor to have an energy audit done in order to participate in this program?	40%	59%	1%	73

*Note: 12% said they were aware of the SBEC program only after it was described to them during the survey.

Table 34 shows the percentage of non-participants that were aware of SCE's Express Efficiency program. As can be seen in the table, 31 percent of the respondents were aware of the Express Efficiency program. Among this group, only 6 percent (2 percent of all respondents) participated in the program.

Table 34: Non-Participant Awareness of Express Efficiency Program

Question	Yes (%)	No (%)	Don't Know (%)	n
A5: Are you aware of SCE's Express Efficiency Rebate Program?	31%*	68%	1%	200
A15: Since January 2002 did your firm participate in the SCE Express Efficiency Rebate Program at this location?	6%	87%	7%	62

*Note: 16% said they were aware of Express Efficiency only after it was described to them during the survey.

Table 35 shows non-participants' knowledge of energy efficient products. Most non-participants (60 percent) said they are somewhat knowledgeable about energy efficiency products, and the remainder was roughly split between being fully knowledgeable, and not at all knowledgeable.

Table 35: Non-Participant Knowledge of Energy Efficiency Products

Response (n = 200)	% Of Respondents
Fully knowledgeable	18%
Somewhat knowledgeable	60%
Not at all knowledgeable	22%

PE30: Using a scale from 1 to 10, where 1 means you are NOT AT ALL KNOWLEDGEABLE and 10 means you are FULLY KNOWLEDGEABLE, how knowledgeable are you about energy efficiency products and how they'll perform?

Note: Respondents gave ratings on a 1 to 10 scale, and these were categorized so that 8 to 10 denotes "fully knowledgeable", 4 to 7 denotes "somewhat knowledgeable", and 1 to 3 denotes "not at all knowledgeable".

Table 36 shows the results of multiple survey questions designed to obtain information on potential market barriers to energy efficient investments. 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 on a 1 to 10 scale, where 1 = "Completely Disagree" and 10 = "Agree Completely". Scores of 8 to 10 were grouped to signify "Strongly Agree", scores of 4 to 7 = "Agree Somewhat", and scores of 1 to 3 = "Strongly Disagree ".

Two statements regarding inadequate bill savings and insufficient knowledge received the highest level of agreement among the questions. The statement "actual bill savings will be less than estimated" received an average score of 6.0, with 32 percent strongly agreeing and 48 percent agreeing somewhat. In contrast, only 16 percent of respondents strongly disagreed with the statement on bill savings. There was also a higher level of agreement with the statement "I don't have the information I need to make informed decisions" (average score of 6.0). Thirty-nine percent of the respondents strongly agreed with this statement, and 35 percent agreed somewhat. In comparison, participants gave a slightly higher level of agreement (6.7 compared to 6.0) for the statement "bill savings will be less than estimated" and a slightly lower level of agreement for the statement "I don't have the information I need to make informed decisions."

The non-participant respondents were generally split regarding whether or not too much time and hassle is needed to choose an energy efficient contractor, and gave an average score of 5.1. Similarly, the respondents were split regarding the statement "lack of financing is a barrier to our organization making energy efficiency investments", and gave an average score of 5.1. For both questions, the largest share of respondents (38 percent) gave a "neutral" score in the 4 to 7 range. In comparison, participant responses were similar, though slightly higher on average than non-participant responses.

Non-participant respondents disagreed more strongly with the statement that "getting a utility rebate is too much hassle", by giving an average score of 4.5. In addition, significant numbers of non-participants disagreed with the statement relating to investment decisions and building ownership. Fifty-five percent of respondents strongly disagreed with the statement that "it's not worth investing in energy efficiency because it's not my building", and the average score was 3.7. These responses are similar to those given by participants.

Table 36: Non-Participant Perceptions of Market Barriers

Response (n = 200)	Strongly Agree (%)	Agree Somewhat (%)	Strongly Disagree (%)	Don't Know (%)	Average Score – Non-Participants	Average Score – Participants
When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than estimated.	32%	48%	16%	4%	6.0	6.7
I don't have the information I need to make an informed decision about energy efficient investments.	39%	35%	25%	1%	6.0	5.5
There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	27%	38%	32%	3%	5.1	5.4
Lack of financing is a barrier to our organization making energy efficient investments that we want to make.	27%	38%	33%	2%	5.1	5.9
Getting a utility rebate is too much hassle.	16%	39%	39%	6%	4.5	4.5
It's not worth investing because it's not my building.	16%	26%	55%	3%	3.7	3.9

PE35A-F: Using a scale from 1 to 10, where 1 means you STRONGLY DISAGREE and 10 means you AGREE STRONGLY, how much do you agree with the following statements?

Note: Respondents gave ratings on a 1 to 10 scale, and these were categorized so that 8 to 10 denotes "Strongly Agree", 4 to 7 denotes "Agree Somewhat", and 1 to 3 denotes "Strongly Disagree".

The respondents were also asked to rate potential sources of energy information using a 1 to 10 scale, where 1 = "Not at all Desirable" and 10 = "Highly Desirable". Scores of 8 to 10 were grouped to signify "Very Desirable", scores of 4 to 7 = "Somewhat Desirable", and scores of 1 to 3 = "Not Desirable".

Table 37 shows that the respondents would most like to learn about energy issues through printed materials developed by their utility (the average score was 7.2). The second most desirable information sources were the Internet and recommendations resulting from an energy audit (both received average scores of 6.1). The respondents were least interested in learning about energy issues from energy contractors or trade organizations.

Table 37: Non-Participant Preferred Source of Energy Information

Response (n = 200)	Very Desirable (%)	Somewhat Desirable (%)	Not Desirable (%)	Don't Know (%)	Average Score
Internet	44%	27%	28%	1%	6.1
Directly from contractor	25%	35%	39%	1%	4.9
At a community event or trade organization meeting	22%	38%	38%	2%	4.8
As part of an audit recommendation	36%	44%	19%	1%	6.1
Printed materials from your utility	55%	34%	10%	1%	7.2

PE40_1 to 5: How would you prefer to receive energy-related information? Please rate the following sources on a 1 to 10 scale, where 1 means NOT AT ALL DESIRABLE and 10 means HIGHLY DESIRABLE.

Note: Respondents gave ratings on a 1 to 10 scale, and these were categorized so that 8 to 10 denotes "Very Desirable", 4 to 7 denotes "Somewhat Desirable", and 1 to 3 denotes "Not Desirable".

Finally, non-participants were asked under what conditions might they install energy efficient equipment in the future using a 1 to 10 scale, where 1 = "Extremely Unlikely" and 10 = "Extremely Likely". Scores of 8 to 10 were grouped to signify "Very Likely", scores of 4 to 7 = "Somewhat Likely", and scores of 1 to 3 = "Not Likely".

Table 38 shows that the respondents are much more likely to install energy efficient lighting if an SCE affiliated contractor offers to do the installation for free. This scenario received an average score of 7.9. In contrast, businesses were generally not likely to install energy efficient lighting without any financial assistance or discounts (e.g., rebates), as this scenario received an average score of only 3.2.

Table 38: Non-Participant Likelihood of Installing Energy Efficient Equipment

Response (n = 200)	Very Likely (%)	Somewhat Likely (%)	Not Likely (%)	Don't Know (%)	Average Score
In the next year, my business will hire a lighting contractor to install energy efficient lighting.	11%	24%	63%	2%	3.2
My business will install energy efficient lighting if a contractor approaches my business and offers to do the installation at a discounted price through an Edison rebate program.	28%	41%	30%	1%	5.3
My business will install energy efficiency lighting if an Edison affiliated contractor approaches me and offers to do the installation for free.	72%	16%	12%	0%	7.9

PE50_1 to 3: Please indicate the likelihood of installing energy efficient lighting at your business under the following conditions, where 1 means EXTREMELY UNLIKELY and 10 means EXTREMELY LIKELY.

Note: Respondents gave ratings on a 1 to 10 scale, and these were categorized so that 8 to 10 denotes "Very Likely", 4 to 7 denotes "Somewhat Likely", and 1 to 3 denotes "Not Likely".

SAVINGS VERIFICATION

This chapter presents results from the verification analysis based on the participant phone survey and on-site data. In addition to the verification results, annual hours of operation for CFL and T8 measures are presented based on lighting logger and on-site participant self-report data. An estimate of the effective useful life for CFLs is also presented based on on-site data collection and the estimated hours of operation. Finally, the level of free ridership associated with the program is presented based on participant phone survey data.

Phone Survey Measure Installation Verification

The participant survey included questions designed to verify that the participants installed the measures specified in the program tracking database. The survey asked a sample of 647 participants if they recalled participating in SCE's Small Business Energy Connection program and the responses are shown in Table 39. Only three customers claimed they did not participate, and 43 others either did not know or refused to respond. The 601 customers that recalled participating in the program completed the remainder of the telephone survey.

Table 39: Respondent Recollection of Program Participation

Response (n = 647)	% Of Respondents
Yes, participated in SBEC as described	92%
Yes, participated in SBEC program, but don't recall that as the name	1%
No, did not participate	0%
Don't know	7%

A5: Earlier this year did your business participate in SCE's Small Business Energy Connection Program at this location?

Participants were also asked if they had installed the equipment provided by the program. Of the 1,060 measures asked about in the survey, seven percent of the measures were not verified by the respondents, as shown in Table 40. Most of these measures were CFLs, and these generally corresponded to installations that had relatively few CFLs installed.

Table 40: Phone Survey Measure Verification (# of Respondents)

Response (n = 601)	Total (%)	CFL (%)	Exit Sign (%)	T8 (%)
Yes	92%	83%	87%	99%
No	7%	16%	11%	0%
Don't know	1%	2%	2%	1%
Total	1,060	410	53	597

A20: Was the equipment installed through SCE's Small Business Energy Connection Program?

Table 41 provides the quantity of equipment that was installed that corresponds to the measure categories and customer responses provided in Table 40. Participants were unable to identify only one percent of the measures during the phone survey. For CFLs, although 16 percent of the participants did not recall the measure being installed, this accounted for only 9 percent of the total number of CFLs installed through the program. Participants were asked if they recalled the exact number of measures that were installed under the program. Roughly half of the customers knew the exact number. Nearly three quarters knew their measure count within one, and only 1 percent of all customers thought their measure count was off by 10 or more.

Table 41: Phone Survey Measure Quantity Verification (# of Measures)

Response (n = 601)	Total	CFL	Exit Sign	T8
Yes	20,501	2,343	170	17,988
No	226	211	15	0
Don't know	85	19	4	62
Total	20,812	2,573	189	18,050

A20: Was the equipment installed through SCE's Small Business Energy Connection Program?

There has been some concern in California that CFLs rebated through energy efficiency programs are not all installed, and that some are kept in storage for future use. Participants were asked if all of their CFLs received through the program were installed, or if some were placed in storage for later use. Only four percent of the participants stated that some of the CFLs they received were placed in storage, and no one claimed that all of their CFLs were placed in storage, as shown in Table 42.

Table 42: CFLs Stored for Future Use

Response (n = 339)	% Of Respondents
All installed	90%
Some installed, rest in storage	4%
All in storage	0%
Don't know	6%

A21: Were all of your CFLs installed, or were some placed in storage for later use?

Table 43 shows the type of lamps that were replaced for those participants that had CFLs installed. In most cases, the new CFLs replaced incandescent lights, but for 9 percent, the CFLs were used to replace existing CFLs. While these types of replacements should be minimized, it appears that this result is consistent with what was found in the Express Efficiency evaluation. For Express Efficiency, a survey of 40 lighting vendors found that existing CFLs were replaced

about 11 percent of the time.[5] Among all participants, 18 percent said that CFLs replaced existing CFLs, and among the very small customers (< 20 kW), the CFL-to-CFL replacement rate was 15 percent.

Table 43: Type of Lamp Replaced by CFLs

Response (n = 339)	% Of Respondents
Incandescents	80%
CFLs	9%
Other	1%
Don't know	11%

A33: When the CFLs were installed, what kind of lamp did you replace?

Participants were also asked if any of their measures have failed or been removed for other reasons. Table 44 shows the percentage of participants that have had failures or removals, along with the mean number of bulbs that have either failed or been removed. Overall, 9 percent of CFL participants and 7 percent of T8 participants have experienced a failure or removal (no exit signs have failed or been removed, however). The average number of failures and removals is relatively low, and nearly identical across the two measures, with less than 2 bulbs failing, and a little over 1 bulb being removed. This appears to be consistent with what one might expect for a measure's typical effective useful life.

Table 44: Failures and Removals by Measure Type

	CFL (%)	Exit Sign (%)	T8 (%)
Yes	9%	0%	7%
No	91%	98%	92%
Don't know	1%	2%	1%
Response (n=)	339	46	593
Mean number failed	1.8	-	1.8
Mean number removed	1.2	-	1.3
Response (n=)	30		44

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

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[5] See *2003 Statewide Express Efficiency Program Measurement and Evaluation Study* page 5-10 for discussion of the lighting vendor survey results.

On-Site Measure Installation Verification

On-site audits were completed for a sample of 200 sites and these sites were recruited from the sample of 601 participants completing the phone survey. Of these 200 sites, 75 sites were audited in 2005 and another 125 in 2006. These 200 sites cover 348 different equipment installations (combinations of measure type and site), and 4,917 individual pieces of equipment (e.g., lamps).

Table 45 shows the distribution of the 4,917 measures and 200 sites that were audited, and the status of the rebated measures broken out into the four measure categories. Overall, nearly all of the measures were verified, and very few were reported to have failed, been removed or placed in storage. CFLs exhibited the highest failure rate (3 percent), removal rate (2 percent), and storage rate (3 percent). Every exit sign was verified, and found to be in place and operating. A small number of T8s were not verified, and a small number had failed or were removed. None were in storage.

Table 45: Measures Verified During On-Site Audits

Rebated Measures	Equipment Rebated		Equipment Verified		Equipment Failed		Equipment Removed		Equipment in Storage	
	Sites	Measure Quantity	Measure Quantity	Percent	Measure Quantity	Percent	Measure Quantity	Percent	Measure Quantity	Percent
CFLs	134	456	458	100%	12	3%	7	2%	14	3%
Exit Signs	14	39	39	100%	0	0%	0	0%	0	0%
T8/T5s	200	4,422	4,427	100%	7	0%	13	0%	0	0%
TOTAL	200	4,917	4,924	100%	19	0%	20	0%	14	0%

ANNUAL OPERATING HOUR AND EFFECTIVE USEFUL LIFE ASSESSMENT

For this study, an estimate of the annual operating hours was developed for both CFLs and T8s based on lighting logger data collected at 25 sites and on-site data at 200 sites. Furthermore, an estimate of the effective useful life (EUL) for CFLs was also developed based on the on-site data and resulting annual operating hour estimate.

The evaluation of hours of operation is based on a nested sample design, which will allow the large sample of on-site data to be used to adjust and validate the smaller, but more accurate sample of lighting logger sites. Lighting loggers were installed at 25 sample sites selected from the overall participant population to assess the actual on-off schedules of program-related CFL and T8 installations. In addition, data was collected during 200 on-site visits (during which lighting loggers were installed at 25 sites) to assess CFL and T8 counts, hours of operation, and overall site characteristics. Furthermore, make and model information was gathered in order to determine the manufacturer's rated lifetime for CFLs installed through the program. The sample for the 200 on-sites was selected randomly. Twenty-five of the 200 on-sites were recruited for the installation of lighting loggers, and were chosen to be representative of 5 business types (office, retail, health care, industrial and other), with five sites randomly selected from each of the five business types.

As part of the on-sites, the auditor collected detailed information regarding how the lighting measures operated at the facility. During each on-site, the auditor defined up to 6 unique lighting

usage areas within the facility, and identified the number of CFLs and T8s that were installed within each usage area. A usage area is defined as an area within the premise for which the lighting equipment behaves similarly with respect to when the lights come on and off and how frequently the lights are on during the "on" period. For each usage area, the auditor interviewed the facility representative to determine when the corresponding lighting measures are typically used, and what percent of the lights are typically on during that period.

The following example should help clarify this process. Consider an office that is divided into five unique usage areas: windowed office areas, non-windowed office areas, conference rooms, bathrooms, and lobby/entrance. The lighting in the first four areas may all typically operate from 8 AM to 6 PM, and the lobby may operate 24 hours. Furthermore, the lighting in the windowed offices may typically be on 25 percent of the time during those hours, compared to 50 percent for non-windowed office areas, 20 percent for conference rooms, 10 percent for bathrooms, and 100 percent for the lobby.

Lighting loggers provide the most accurate data for assessing actual hours of operation. For a monitored fixture, a lighting logger registers the time and date the fixture is turned on or off. Multiple loggers were installed at each site in the areas where T8s and CFLs were installed. When a site is visited for the installation of lighting loggers, a field technician will first disaggregate the premise into a number of discrete use areas, such that the usage of the fixtures being monitored is homogeneous within an area. For example, in an office setting, you may have a reception area, hallway, bathrooms, storage room, windowed offices, non-windowed offices, and conference room. One or more loggers will be placed in each use area, and the field technician will note the number of installed fixtures in the use area that are represented by the logger(s). To develop a site level usage profile, the individual loggers are aggregated up, weighting each logger by the number of fixtures they represent in their corresponding usage area. Because the program targeted small customers, oftentimes there were only a few fixtures installed in only one or two usage areas. Most sites typically required only a few loggers, and some up to seven. The number of loggers was determined by the number of usage areas defined, and the homogeneity of the usage patterns within an area. For example, if the use area is controlled by a single switch, there is no reason to place more than one logger in the area. This was true for most use areas in the study, so that many times there was not sampling error within a site. When a usage area could not be captured by a single logger, the technician generally installed two or three loggers to increase the precision of the estimate for the usage area. However, as mentioned, this was not common.

The loggers remained in place for more than two months to collect data. Upon removal, the data from the loggers were processed to produce an hourly on-off profile for each logger. During installation, each logger was assigned to a usage area and the number of T8s or CFLs in each usage area was recorded. These bulb counts were used to develop weights to be applied in the aggregation of individual loggers into an overall site schedule. Figure 4 presents an example of how the bulb counts were applied as weights. In the example, there are two usage areas and a total of five loggers. The count of CFLs in each schedule group was divided evenly among its loggers. These counts were then divided by the total CFL count to create the weights.

Figure 4: Logger Weight Calculation Example

Loggers	Schedule Group	CFLs
3	1	120
2	2	60

Logger No.	Schedule Group	CFLs	Weight
1	1	40	22%
2	1	40	22%
3	1	40	22%
4	2	30	17%
5	2	30	17%

This step is particularly important to deal with cases where there have been a small number of bulbs installed in areas of a site that are not representative of the principal use for T8s and CFLs in the facility as a whole. For example, if there are 10 bulbs installed in a storage area of a site that has 100 total bulbs, the logger associated with that schedule group will be assigned a weight of 10%. These weights were used in aggregating the multiple loggers into average hourly operating schedules for each type of day (weekday, Saturday, and Sunday) and hour for each measure (CFL and T8) at each site. Figure 5 provides an example of how this weighting affects the final shape for a site with four loggers by showing the individual logger shapes along with overall site averages with and without weights. Note the shape for Logger 4, which is barely perceptible at the bottom of the chart. The schedule group for this logger represents only 4% of the total bulbs. Without applying weights during aggregation, the average schedule is around 10 percentage points below what it should be.

Figure 5: Weighted Versus Non-Weighted Site Schedule Example
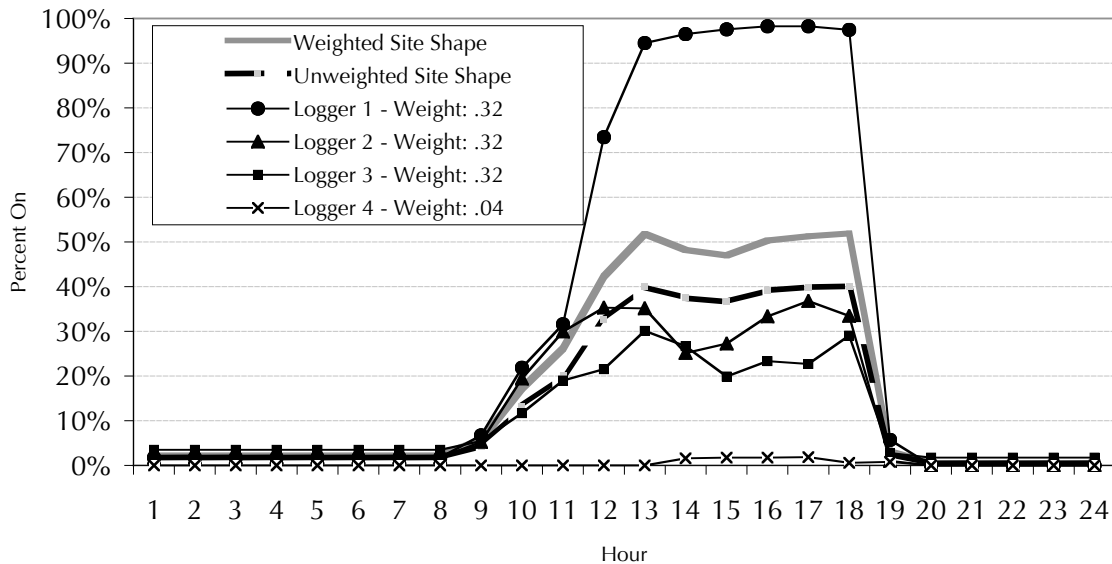
Figure 6 provides the resulting weekday profiles for both CFLs and T8s for the sample of 25 logger sites. Clearly, there is a significant difference in the way in which CFLs and T8s are used among these participants. Generally, T8s are the predominant measure installed at a facility, with the average number of lamps being 19 T8s per participant, compared to only 4 CFLs. From the on-sites, approximately 75 percent of the participants had some CFLs installed in bathrooms, which tend to be operated only periodically. Therefore, it is likely that CFLs were generally placed in lower use areas than T8s.

Figure 6: Average Weekday Lighting Operation Schedule (T8s and CFLs)
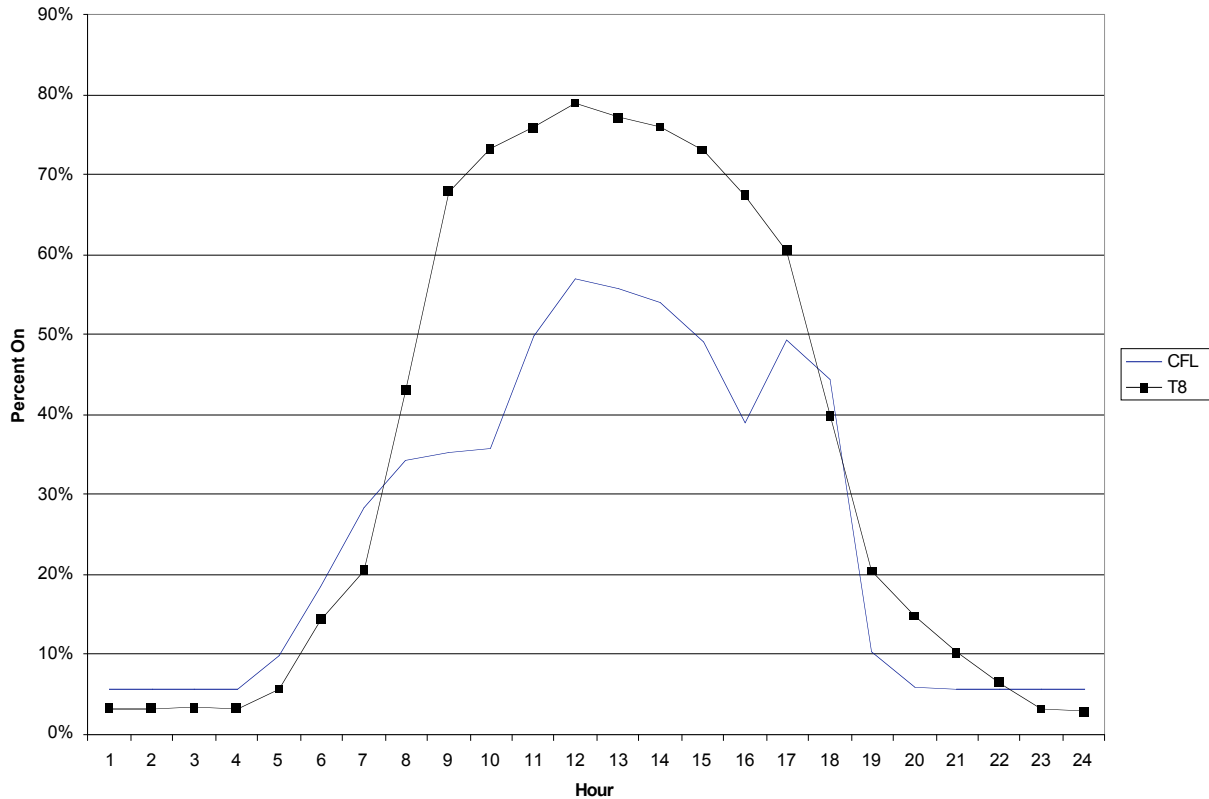
As mentioned above, the evaluation of hours of operation is based on a nested sample design which will allow the large sample of on-site data be used to adjust and validate the smaller, but more accurate sample of lighting logger sites. Hours of operation were estimated based on self report data (separately for CFLs and T8s) for all 200 customers in the on-site sample. The self report value for the 25 customers that also had lighting loggers installed was compared to the self report value for the entire sample of 200 on-sites. An adjustment factor was developed, which was the ratio of operating hours for the 200 on-sites divided by the operating hours for the 25 on-sites, to correct for any bias due to the small lighting logger sample. This adjustment factor was then applied to the estimated hours of operation based on the lighting logger data to correct for this bias. The formula for this adjustment is:

$$Annual\_Op\_Hours = Logger\_Op\_Hours \left(\frac{\overline{Onsite\_Op\_Hours}}{\overline{Logger\_Onsite\_Op\_Hours}} \right)$$

Where,

Logger_Op_Hours is the estimate of the annual operating hours (for CFLs and T8s) based on the lighting logger data for 25 sites.

Onsite_Op_Hours is the estimate of the annual operating hours (for CFLs and T8s) based on self report data from the on-site audits for 200 sites.

Logger_Onsite_Op_Hours is the estimate of the annual operating hours (for CFLs and T8s) based on self report data from the on-site audits for the 25 sites that had loggers installed.

Figure 7 compares the resulting weekday profiles for T8s for the actual logger data, the self report data from the logger sample of 25 sites, and the self report data from the on-site sample of 200 sites. The profiles are all very similar, with the self reports slightly over-estimating the percent of lights on during the middle of the day (open business hours), and slightly under-estimating the percent of lights on during the early morning and late evenings (closed business hours). The two self-report profiles are very similar, with the on-site sample showing slightly more operating hours.

Figure 7: Average Weekday Lighting Operation Schedule for T8s Comparison of Self Report and Logger Data Results
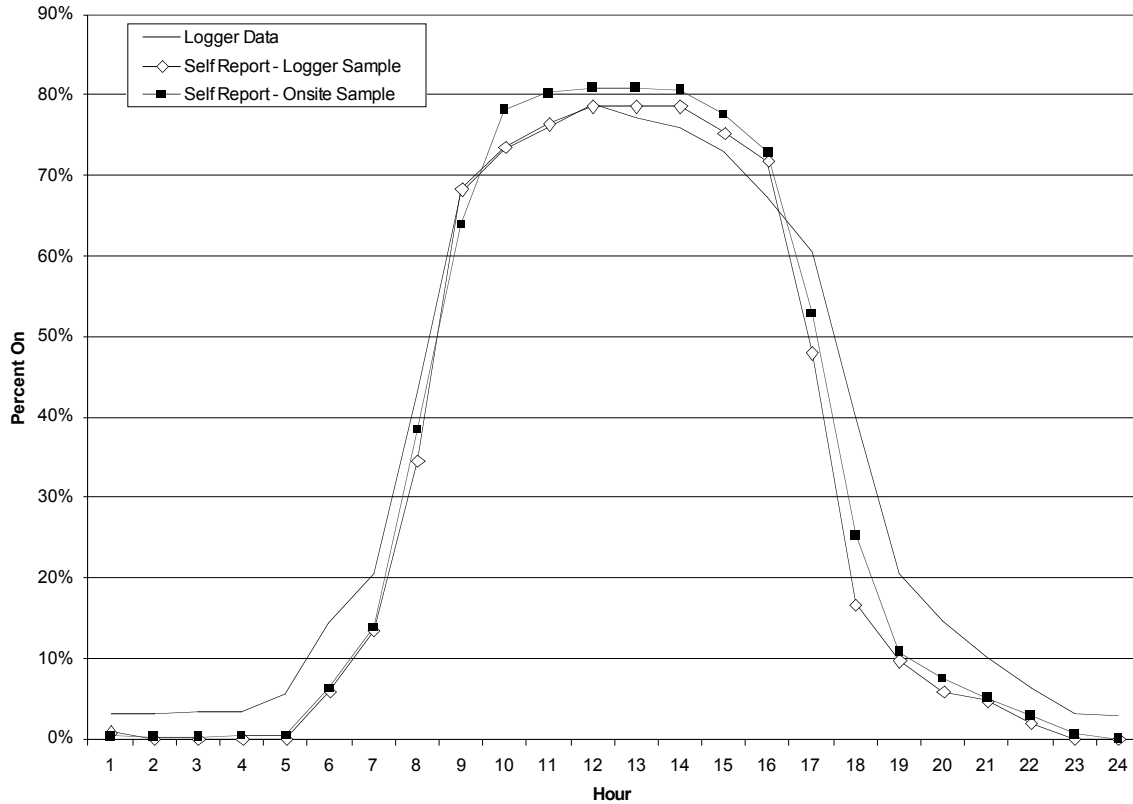
Table 46 compares the aggregate number of annual operating hours for CFLs and T8s based on the actual logger data, the self report data from the logger sample of 25 sites, and the self report data from the on-site sample of 200 sites. Based on the logger data, the estimated annual operating hours were 2,613 for T8s and 1,941 for CFLs. The logger data tended to demonstrate more hours of operation than the self report data, most of this occurring during the shoulder hours and closed business hours. Generally, the self report would indicate that no lights are on during the closed business hours. However, often lights are left on by mistake, or individuals come to work before business hours and stay after business hours. Furthermore, cleaning crews may come in and turn on lights. This finding is consistent with our expectations and other findings. The CFL self-report hours were more significantly under-stated than T8s. This is likely due to the fact that many CFLs were placed in bathrooms (or other low use areas) and the customer was not able to accurately state the percentage of the time that the CFLs were on (typically customers reported the lights being on only 5 to 10% of the time).

Overall, the logger self reported operating hours were 2 to 3% higher than the larger population from the on-site sample reported. Therefore, adjusting the logger data down slightly to better represent the overall population of on-sites, the adjusted annual hours of operation are 2,565 for T8s and 1,881 for CFLs.

Table 46: Lighting Hours of Operation (T8s and CFLs)

| Measure | Logger Sample | | Onsite Sample | Adjustment | Adjusted | Adjusted Data |
	Logger Data	Self Report	Self Report	Factor	Logger Data	EB (90 % CI)
T8	2,613	2,322	2,279	98%	2,565	+/- 13%
CFL	1,941	1,573	1,525	97%	1,881	+/- 41%

A study was recently conducted by ECONorthwest on SDG&E's Small Business Energy Efficiency (SBEE) program, which utilized self report data. The self report estimates of annual operating hours from the SBEE evaluation were extremely close to the adjusted logger data result presented above (2,572 hours for T8s and 1,872 hours for CFLs). Another study was recently completed as part of the 2003 Express Efficiency Evaluation, which measured the annual operating hours of CFLs based on a sample of 60 sites using lighting loggers. This study found the average operating hours to be 2,709 overall, which is much more consistent with the T8 result. This might be expected, as the Express Efficiency program was generally marketed by vendors that were performing CFL-only installations, and probably at sites that were predominantly incandescent, or at least had a large number of existing incandescent bulbs. Therefore, it is likely that the CFLs rebated under the Express Efficiency program and the T8s provided under the SBEE program were installed in fairly similar applications (i.e., as a primary lighting source).

Using the adjusted profiles, we were able to determine the coincident diversity factor based on the percentage of lights operating from between noon and 5 PM. For T8s, the coincident diversity factor was 0.72. Similarly, for CFLs, the coincident diversity factor was 0.50 based on the percentage of lights on during the noon to 5 PM period.

We were unable to determine exactly the current operating hours and coincident diversity factors that are being used in the *ex ante* impacts for the SBEC program. The program uses the impact values for T8s and CFLs from the Express Efficiency programs, but the original values in the work papers for Express Efficiency broke out impacts, operating hours, and coincident diversity factor by building type. For 2004-05 program years, SCE no longer assigns savings by building type but uses a single impact value for each measure. Despite reviewing all the program documentation and having multiple conversations with SCE staff, we were unable to determine how the new impact numbers were calculated. Consequently, there is no record on the current values assumed by SCE for operating hours and coincident diversity factors for CFLs and T8s.

To develop our adjustment factors, we assigned building types to the participation data for 2004-05 based on NAICS code. Based on these building type assignments, we then assigned operating hours and coincident diversity factors using the values from the Express Efficiency work papers. We then took the average (weighted by number of installed measures) of all the 2004-05 participants to estimate the *ex ante* values for operating hours and coincident diversity factors.

The results of this effort are shown in Table 47 and the estimated *ex ante* results are compared with the new evaluation results for both operating hours and coincident diversity. These results are used to determine the *ex post* net evaluation results, as discussed in the next section.

Table 47: Estimated *Ex Ante* Operating Hours and Coincident Diversity Factors

Measure	Estimated *Ex Ante* Operating Hours	Evaluation *Ex Post* Operating Hours	Estimated *Ex Ante* Coincident Diversity Factor	Evaluation *Ex Post* Coincident Diversity Factor
T8	4,399	2,565	0.83	0.72
CFL	4,540	1,881	0.79	0.50

An additional objective of 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 were collected. These data allowed us to determine the manufacturer's rated lifetime for 692 CFLs installed through the program. The average manufacturer's rated life among these integral CFLs was 8,321 hours.[6] Based on the 1,881 annual hours of operation discussed above, this would equate to an estimated effective useful life of 4.4 years for integral CFLs, based on the manufacturer's rated lifetime.

It is extremely important to note that because the EUL is a function of the annual operating hours, the EUL presented here should not be used in conjunction 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 8,321 hours divided by the annual operating hours. For example, if 2,200 annual operating hours were used, then the resulting EUL would be 3.8 years.

A review of the *ex ante* impacts used for the SBEC indicates that a 16 year EUL is being assumed for CFL lamps, as this is the value listed in the PIP and used in the CPUC workbooks for this program. This is undoubtedly too high as it exceeds the values recommended in the Policy Manual and the DEER database. Based on our evaluation results, we recommend that an EUL of 4.4 years be used for CFLs in the future and we have used this lower EUL in calculating the lifetime savings for the SBEC program.

SELF-REPORT FREE RIDERSHIP ANALYSIS

An assessment was performed to determine the influence the program has had on the participant's decision to install the measures covered by the Small Business Energy Connection program. As shown below in Table 48, 86 percent of the participants felt that the fact that SCE sponsored the program was very important in their decision to participate.

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[6] 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.

Table 48: Importance of SCE Program Sponsorship

Response (n = 601)	% Of Respondents
Very important	86%
Somewhat important	11%
Not at all important	3%
Refused	0%

REB1: In deciding to participate in the Small Business Energy Connection program, how important was it to you that SCE sponsored the program?

SCE leveraged off community based organizations (CBOs) to deliver its Small Business Energy Connection program. As shown in Table 49, 60 percent of all customers that interacted with one of the CBOs (173 surveyed) found their involvement to be very important in their decision to participate in the program.

Table 49: Importance of CBO Involvement

Response (n = 173)	% Of Respondents
Very important	60%
Somewhat important	23%
Not at all important	17%
Refused	0%
Don't know	1%

REB2: In deciding to participate in the Small Business Energy Connection program, how important was it to you that the CBO was involved with the program?

Furthermore, as shown in Table 50, 69 percent of the participants also felt that the information provided by the program's technician was very important in helping them decide to install the new equipment provided by the program.

Table 50: Importance of Information Provided by Program Technician

Response (n = 601)	% Of Respondents
Very important	69%
Somewhat important	24%
Not at all important	5%
Refused	0%
Don't know	2%

REB3: The technician provided you with information to help you understand energy costs and ways to manage them. How important was this information in helping you decide to install the new equipment provided by the program?

As shown in Table 51, only 20 percent of participants claim they were considering installing the measures that were provided by the program before being visited by the SCE technician. This is a strong indication that free ridership is low for the program. This finding is consistent for CFLs (23 percent) and T8s (17 percent), but higher for Exit Signs (35 percent).

Table 51: Participants Considering Installing Equipment Prior to Participating

	Total (%)	CFL (%)	Exit Sign (%)	T8 (%)
Yes	20%	23%	35%	17%
No	79%	77%	61%	81%
Don't know	1%	0%	4%	2%
Response (n =)	601	339	46	593

REB10: Before the SCE technician visited your facility, were you already considering installing the measure?

Participants were asked what action they would have taken had the program not been available. Participants were asked this question separately for each type of measure they had installed under the program. Overall, only 22 percent of the participants claim they would have bought the same energy efficiency equipment in the absence of the program. Nineteen percent claim they would not have purchased any equipment, and another 55 percent would have purchased standard equipment. Table 52 shows that these results are fairly consistent across measures, with slightly more CFL participants (29 percent) claiming they would have purchased the same energy efficient equipment, and T8s slightly less (18 percent). Again, this is a strong indication that the program has influenced the majority of customers to adopt the measures installed under the program.

Table 52: Self-Reported Actions in Absence of the Program

	Total (%)	CFL (%)	Exit Sign (%)	T8 (%)
Bought no equipment	19%	11%	17%	24%
Bought the same energy efficient equipment	22%	29%	22%	18%
Bought standard equipment	55%	57%	54%	55%
Refused/Don't know	3%	2%	7%	4%
Response (n =)	601	339	46	593

REB50: What action would you have taken had the Small Business Energy Connection program not been available?

The results shown in Table 53 show the survey results relating to the possible timing of equipment installations if the program did not exist. Participants that claimed they would have purchased the same energy efficient equipment in the absence of the program were also asked if they would have purchased that equipment at the same time, within a year, or more than a year, if the program had not existed. Twenty-five percent of all customers claim they would have waited more than a year to adopt the measure if the program had not provided it. Participants were more likely to have waited to install T8s (30 percent) than exit signs (20 percent) than CFLs (20 percent). Only 22 percent claim they would have purchased the measure at roughly the same time, again a strong indication of the influence of the program.

Table 53: Self-Reported Timing of Installation In Absence of Program

	Total (%)	CFL (%)	Exit Sign (%)	T8 (%)
At the same time	22%	24%	40%	18%
Within a year	51%	55%	40%	49%
More than a year later	25%	20%	20%	30%
Don't know	2%	1%	0%	3%
Response (n =)	132	100	10	105

REB55: When would you have bought the measure if the program had not provided it?

Participants that claimed they would have installed the same energy efficient equipment were also asked if they would have purchased the same number of measures in the absence of the program. Over three-quarters of the participants claim they would have installed the same number.

Table 54: Self-Reported Quantity of Installation In Absence of Program

	Total (%)	CFL (%)	Exit Sign (%)	T8 (%)
Yes	76%	78%	100%	72%
No	21%	20%	0%	24%
Don't know	3%	2%	0%	4%
Response (n =)	132	100	10	105

REB65: Would you have purchased the same number of measures as were installed by the program?

Of the information presented above, the most revealing questions regarding the program's influence were the customer's stated action in the absence of the program (both what they would have done and when they would have done it), as well as what they were considering doing at the time they were approached by the SCE technician. To assess the level of free ridership with the program, these three relevant survey questions were integrated and analyzed by technology. Table 55 below provides the integrated survey responses for CFLs installed under the program.[7] Clearly there is a strong relationship between what participants claim they would have installed under the program and what they were considering installing prior to being visited by the SCE technician.

As discussed previously, however, the responses to these questions may be reflecting some level of response bias if respondents do not correctly recall the timing of their decisions or if they are providing responses they perceive to be socially desirable rather than accurately reporting their experiences. While we asked multiple questions to limit these possibilities, we did not attempt any additional adjustments to correct for these potential biases. Consequently, these results should be interpreted with these potential biases in mind.

Although 29 percent of the CFL participants claim they would have purchased CFLs either now or in the future (see Table 39), many of these customers had larger installations. When weighted by CFL bulbs installed, 41 percent of the CFLs would have been purchased either now, or in the future, as shown in Table 41. Of this 41 percent, only 7 percent say they would have installed the CFLs at the same time, and that they were already considering installing the CFLs before being visited by the SCE technician. Twenty-nine percent claim they would have installed the same equipment, but at a later date, and nearly two-thirds of these claim they were already considering installing the CFLs before being visited by the SCE technician. 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.

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[7] Note that results provided in Table 55 thru Table 57 are weighted by the number of measures installed to provide a more accurate program-level assessment of free ridership.

- Those that claim they would have purchased the same equipment at the same time, but were not considering installing the equipment at the time the SCE technician visited their facility 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 at the time the SCE technician visited their facility 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).

Based on this assessment, free ridership is estimated at 21 percent for CFL measures.

Table 55: Installation Intent and Timing Without Program (CFLs)

Type of Equipment	Considering installing CFLs?	Percent of Total*	N
None	Yes	0.3%	3
	No	6.4%	35
Standard equipment	Yes	4.7%	18
	No	47.7%	175
Same energy efficient equipment, later	Yes	18.6%	37
	No	10.4%	38
Same energy efficient equipment, now	Yes	6.8%	15
	No	5.0%	9
Total		100%	330

REB50/55: What type of equipment would you have purchased had the rebate not existed?

REB10: Before the SCE technician visited your facility, were you already considering installing the CFLs?

* Percent is weighted by number of CFLs

N is number of participants

For exit signs, shown in Table 56, the program appears to be even more influential. Only 16 percent of the participants (weighted by number of exit signs installed) claim they would have purchased exit signs either now or in the future. Of this 16 percent, only 6 percent say they would have installed the exit signs at the same time, and that they were already considering installing the exit signs before being visited by the SCE technician. Seven percent claim they would have installed the same equipment, but at a later date, and most of these claim they were already considering installing the exit signs before being visited by the SCE technician. Using

the same scoring algorithm discussed above for CFLs would result in a free ridership rate of only 11 percent for exit signs.

Table 56: Installation Intent and Timing Without Program (Exit Signs)

Type of Equipment	Considering installing exit signs?	Percent of Total*	N
None	Yes	0.0%	0
	No	20.6%	8
Standard equipment	Yes	21.9%	9
	No	41.3%	16
Same energy efficient equipment, later	Yes	5.6%	5
	No	1.3%	1
Same energy efficient equipment, now	Yes	6.3%	2
	No	3.1%	2
Total		100%	43

REB50/55: What type of equipment would you have purchased had the rebate not existed?

REB10: Before the SCE technician visited your facility, were you already considering installing the exit signs?

* Percent is weighted by number of exit signs

N is number of participants

The program was also very influential on the T8 measures, as shown in Table 57. Only 21 percent of the participants (weighted by number of T8s installed) claim they would have purchased T8s either now or in the future. Of this 21 percent, only 1.5 percent say they would have installed the T8s at the same time, and that they were already considering installing the T8s before being visited by the SCE technician. Nineteen percent claim they would have installed the same equipment, but at a later date, and roughly half of these claim they were already considering installing the T8s before being visited by the SCE technician. Using the same scoring algorithm discussed above for CFLs would result in a free ridership rate of only 9 percent for T8s.

Table 57: Installation Intent and Timing Without Program (T8s)

Type of Equipment	Considering installing T8s?	Percent of Total*	N
None	Yes	3.0%	11
	No	28.6%	131
Standard equipment	Yes	4.8%	35
	No	42.2%	284
Same energy efficient equipment, later	Yes	10.1%	37
	No	9.1%	44
Same energy efficient equipment, now	Yes	1.5%	12
	No	0.6%	6
Total		100%	560

REB50/55: What type of equipment would you have purchased had the rebate not existed?

REB10: Before the SCE technician visited your facility, were you already considering installing the T8s?

* Percent is weighted by number of T8s

N is number of participants

For the program overall (for which T8s and CFLs comprise roughly 76 percent and 21 percent of the program's first year kWh savings, respectively), using the above would result in a free ridership rate of about 12 percent. Given that the program may have some participant spillover benefits, these results are in line with the current net-to-gross ratio of 0.96 being used by the program.

For the self-report 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 SCE technician about the program. 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 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 speaking with an SCE technician). With these lower rates, the estimated free ridership for CFLs falls from 21 percent to 14 percent. Similarly, for exit signs the rate falls from 11 percent to 9 percent, and for T8s the rate falls from 9 percent to 5 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 speaking with an SCE technician. With this weighting increase, the estimated free ridership rate

for CFLs increases from 21 percent to 28 percent. Similarly, for exit signs the rate increases from 11 percent to 13 percent, and for T8s the rate increases from 9 percent to 13 percent.

This sensitivity analysis is summarized in Table 58. 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 58: Sensitivity Analysis for Self Report Free Ridership Results

Free Ridership Weighting Scheme	CFL (%)	Exit Sign (%)	T8 (%)
Current Weighting (Partial FR weight = 50%, 25%)	21%	11%	9%
Low Weighting (Partial FR weight = 25%, 12.5%)	14%	9%	5%
High Weighting (Partial FR weight = 75%, 37.5%)	28%	13%	13%

4. NET IMPACT ANALYSIS

The information from the engineering analysis and the on-site verifications was incorporated into a net billing model to determine *ex post* net program impacts for the 2004-05 SBEC program. For this model, we utilized the entire population of participants from 2004-05 and matched them to the population of nonparticipants based on industry type (NAICS code) and usage.

To estimate the billing model, several data screens were used to create a dataset with complete billing data and to rule out potential outlier observations that might have undue influence over the model. Specifically, the data screens were designed to remove those observations that had incomplete billing data or did not have sufficient post-installation billing data to estimate annual impacts. In addition, those observations that had disproportionately large estimated savings relative to overall usage were dropped from the analysis, as the large savings (greater than 50 percent of pre-period usage) are likely reflecting errors in the usage data rather than actual impacts given the types of measures promoted by this program. Similarly, customers with large variances in usage (i.e., variance more than 35 percent of the mean) were dropped from the model as it is unlikely that we will be able to detect the effect of measure savings with such large swings in usage.

The number of observations dropped from each of these screens for participants and nonparticipants is shown in Table 59. Note that for many of these observations, multiple screening criteria apply. Of total participant population of 7,860, a sample of 431 remained as regression observations after the screens were applied. The vast majority of the screened participant observations were dropped due to insufficient data (late installation). We therefore do not believe that the large number of screened observations introduced bias into the results. The total number of screened observations and the remaining observations used in the regression are shown at the bottom of the table.

Table 59: Observations Dropped Due to Screening Criteria

Type	Part	NonPart
Population	7,860	39,261
Late Installation	6,790	0
Post Usage > 2X Pre Usage	740	8,072
Post Usage > 1.5X Pre Usage	995	9,226
Pre Usage > 2X Post Usage	457	913
Pre Usage > 1.5X Post Usage	698	1,864
Savings > Pre Usage	854	0
Savings > Half of Pre Usage	1,551	0
Missing Usage Data (Pre-Period)	968	9,788
Missing Usage Data (Post-Period)	739	5,728
Variance > 0.35 in Pre-Period	1,507	7,349
Variance > 0.35 in Post-Period	1,428	8,865
Missing Cooling Degree Day Data	5	0
Missing Heating Degree Day Data	5	0
Screened Observations	**7,429**	**28,151**
Regression Observations	**431**	**11,110**

Using data for both participants and nonparticipants, a Statistically Adjusted Engineering (SAE) billing model is estimated using ordinary least squares regression (OLS). In addition to measure savings, the model also includes variables for pre-installation kWh usage, changes in weather, business type, and categorical variables based on kWh usage.

The basic form for the net billing model is as follows:

$$kWh_{i,post} = \beta' Eng + \beta'(kWh_{i,pre}UsageCat) + \beta'(kWh_{i,pre}Business_i) * + \beta'(kWh_{i,pre}Weather) + \varepsilon_i$$

Where :

α = Intercept term

Eng = Ex ante savings estimates adjusted using evaluation findings on operating hours

$kWh_{i,post}$ = Energy usage during the program post – period for customer i

$kWh_{i,pre}$ = Energy usage during the pre – program period

$kWh_{i,pre}UsageCat$ = Energy usage during the pre – program period interacted with kWh usage category

$kWh_{i,pre}Business$ = Energy usage during the pre - program period interacted with business type

Weather = Energy usage during the pre - program period interacted with the change in Heating Degree Days and Cooling Degree Days by climate zones

ε_i = Random error term assumed normally distributed

β = Coefficients to be estimated

The pre-installation usage is interacted with an indicator variable based on annual kWh usage. The various usage categories are defined below in Table 60.

Table 60: Annual Usage Categories Used in Billing Model

Usage Category	Annual kWh Range	
	Min	Max
1	1,366	5,092
2	5,093	7,148
3	7,149	9,309
4	9,310	12,024
5	12,025	15,960
6	15,961	20,361
7	20,362	27,312
8	27,313	40,977
9	40,978	67,302
10	67,303	321,373

All of the savings variables use the *ex ante* savings values that have been adjusted to account for the lower operating hours (relative to the initial operating hour assumptions) based on the results of the logger lighting study.

Because both participants and nonparticipants are included in the sample, the coefficient estimates on the savings variables can be interpreted as net realization rates since the model accounts for baseline activity that will include at least some installation of measures covered by the SBEC program. In addition, as discussed above, the savings variables are the *ex ante* gross savings values that have been adjusted using the evaluation findings for operating hours. The combination of these adjustments and the inclusion of nonparticipants in the sample results in the coefficient estimates that reflect the *ex post* <u>net</u> realization rates. Any difference from 1.0 for the resulting coefficient estimates will be reflecting free ridership and/or additional adjustments to realized savings that are not accounted for by the operating hour adjustments. Consequently, the coefficient estimates can be used as an estimate of the *ex post* net realization rate.

Table 61 shows the estimation results from the final net billing model specification. The model fits the data well overall as evidenced by the high R-square value and the statistically significant F statistic. A high R-square is common when lag variables are used in regression models, and the high t-value for the pre-usage kWh variables also indicates that the lag usage is an important driver for this model.

The pre-installation kWh variable and the various interaction variables between pre-installation kWh and usage category are all statistically significant at the less than 1 percent level of significance. The magnitude of these coefficients also increases with the size of the usage bin. Variables in the industry groupings are predominantly negative, but none of these variables are statistically significant. . Of the interaction variables between industry groupings and pre-installation kWh, only two are statistically significant. The variables representing changes in heating degree days and cooling degree days are both negative and statistically significant.

The highlighted variable in Table 61 is the coefficient for the savings variables that reflects the estimated savings for all measures. The savings coefficient estimates has the correct sign (negative) and is statistically significant at the less than 1 percent level of significance.

The fact that the savings coefficient estimate is less than 1.0 is reflecting the effect of including a baseline group of nonparticipants in the model.[8] Since nonparticipants are included in the sample, the coefficient estimate incorporates any free ridership effects for these measures. The coefficient estimate implies a maximum free ridership rate of about 13 percent assuming that the entire difference from 1.0 is attributable to free ridership and assuming no spillover. This is only slightly higher than the *ex ante* net-gross-ratio assumption of 0.96 that implies a maximum free ridership rate of 4 percent (assuming no spillover). The primary difference, therefore, between the *ex ante* and *ex post* impacts is due to the lower operating hours. As part of this evaluation we also conducted a self-reported free ridership analysis on a measure specific level. The results of this analysis found that self-reported free ridership to be 9 percent for T8s, 11 percent for exit signs, and 21 percent for CFLs. When these results are weighted by the *ex post* net kWh savings accounted for by each measure, the weighted average free ridership is 11 percent.[9] The NTG

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[8] Note that the coefficient estimate for combined savings variable is also not significantly different from 1.0. Nevertheless, we believe that the discussion above is informative.

[9] Since self reported free ridership rates were not measured for thermostats, the savings attributed to this measure were not included in the free ridership weighted by kWh savings.

ratio measured by the net impact analysis is therefore within 2 percent of the weighted self reported free ridership.

Table 61: Net Billing Regression Model Results

Model Statistics	Value
Observations	11,541
Variables	20
F Statistic	42,470.3
F Statistic Level of Significance	< 1%
Adjusted R-Squared	0.9866

Parameter Estimates	Coefficient	Standard Error	T Statistic	Level of Significance
Savings - All Measures	-0.87	0.178	-4.89	< 1%
Pre Usage*Pre Usage Category 1	1.01	0.06	18.17	< 1%
Pre Usage*Pre Usage Category 2	1.00	0.03	31.80	< 1%
Pre Usage*Pre Usage Category 3	1.00	0.02	43.25	< 1%
Pre Usage*Pre Usage Category 4	0.99	0.02	54.63	< 1%
Pre Usage*Pre Usage Category 5	0.99	0.01	70.80	< 1%
Pre Usage*Pre Usage Category 6	1.00	0.01	91.54	< 1%
Pre Usage*Pre Usage Category 7	0.99	0.01	117.42	< 1%
Pre Usage*Pre Usage Category 8	0.99	0.01	159.46	< 1%
Pre Usage*Pre Usage Category 9	0.99	0.00	219.59	< 1%
Pre Usage*Pre Usage Category 10	0.99	0.00	330.47	< 1%
Pre Usage*Business - Store	-0.009	0.004	-2.51	1%
Pre Usage*Business - Food Service	0.004	0.004	0.92	36%
Pre Usage*Business - Laundry	0.002	0.008	0.3	77%
Pre Usage*Business - Health	-0.002	0.005	-0.33	74%
Pre Usage*Business - Office	-0.004	0.004	-1.15	25%
Pre Usage*Business - Repair	0.005	0.010	0.49	62%
Pre Usage*Business - Manufacturing	0.009	0.004	2.33	2%
Pre Usage*Weather - Change in heating degree days (post-pre)	-0.00002	0.00001	-2.43	2%
Pre Usage*Weather - Change in cooling degree days (post-pre)	-0.00007	0.00003	-2.16	3%

Table 62 below summarizes the impact adjustments recommended, by measure, that take into account the results of the billing analysis and operating hour adjustments.

T8s

Table 62 shows the various adjustment factors used to determine the *ex post* net realization rates for T8s. Since the billing regression used savings estimates that had been adjusted for operating hours prior to being input into the model, this adjustment needs to be done to the original *ex ante* gross impacts to be consistent. In addition to the operating hour adjustment, the coefficient estimate from the billing model is used to adjust for free ridership and any additional savings adjustments to realized savings that are not otherwise captured in the model. It should be noted that the ex ante savings estimates do take into account HVAC interactions as documented in the IOU workpapers. Since *ex post* estimates are scalar adjustments of the *ex ante* estimates, they also incorporate the HVAC interaction effects.

The combined effect of these adjustments is an *ex post* net realization rate of 0.50, as shown in the far right column of Table 62. Again, the *ex post* net realization rate is the product of all the adjustment factors shown in the table for this measure. Using this rate, the realized net impacts estimated in this evaluation are 50 percent of the original *ex ante* gross impacts assumed by the

SBEC program. As discussed above, the majority of the change between the *ex ante* and *ex post* impacts is due to the lower operating hours. Once an adjustment is made for operating hours, the resulting net impacts are generally consistent with the *ex ante* net-to-gross ratio for these measures.

As with any estimate, there is some uncertainty inherent in the *ex post* net realization rate calculation. From the billing model, the final realization rate for the savings variable has a standard error of 0.178, and using this to construct a 90 percent confidence interval around the coefficient estimate results in an error band of +/- 34 percent. It should be noted that there is also error associated with the adjusted operating hour assumptions that was incorporated into the billing regression.[10] Since the billing regression is the primary source of uncertainty in the *ex post* net realization rate for this measure, the 34 percent can be used as a measure of uncertainty in the net realized impacts for T8s as well as the other measures discussed below.

CFLs

For CFLs, a similar process was used to determine the final net impacts. With CFLs, the operating hour adjustment is even more substantial than with T8s. As shown in Table 62, the operating adjustment lowers the impact estimate by 59 percent. When this is combined with the billing regression results, the combined effect of these adjustments is an *ex post* net realization rate of 0.37. The 0.36 adjustment is applied to the *ex ante* gross savings to determine the *ex post* net savings for this measure. As with the T8s, the lower operating hours is the primary cause of the reduction and once an adjustment for hours is made, the *ex post* net realized impacts are generally consistent with the original *ex ante* net-to-gross ratio.

Exit Signs and Thermostats

Since exit signs and thermostats account for less than 2 percent of the total program savings, no additional research was conducted beyond the net impact analysis to determine NTG ratios for these measures. As a result, the realized net *ex post* impacts for Exit Signs and Thermostats were very close to the original *ex ante* impacts assumed for the program as only the billing regression results are used to adjust impacts. For both measures, the 0.87 percent adjustment factor is used to convert *ex ante* gross impacts to net *ex post* impacts, as shown in Table 62.

Table 62: *Ex Post* Net Realization Rates for kWh Impacts

Measure	Operating Hours	Billing Analysis Realization Rate	*Ex Post* Net Realization Rate
T8	0.58	0.87	0.50
CFL	0.41	0.87	0.36
Exit Sign	1	0.87	0.87
Thermostat	1	0.87	0.87

---

[10] As discussed in the annual operating hour assessment in this report, the operating hour adjustments have an error bound of +/- 41% and +/-13% for CFLs and T8s respectively.

2004-05 SBEC Cumulative kWh Impacts

Using the adjustment factors above, the *ex post* net savings numbers are shown below in Table 63. The largest reductions from the original *ex ante* gross impacts are in the T8 and CFL categories, which also comprise the majority of the savings. These reductions from the original planning estimates are largely due to the reduced operating hour adjustments based on the logger data.

Note that Table 63 shows the change in the *ex ante* and *ex post* <u>net</u> savings, while Table 62 shows the change from *ex ante* <u>gross</u> impacts to *ex post* <u>net</u> impacts. For example, for the T8 measure group the *ex post* net impacts are 50 percent of *ex ante* gross impacts (as shown in Table 62), for a reduction of 40 percent from gross to net. The change from *ex ante* net savings to *ex post* net savings is a 48 percent reduction (as shown in Table 63).

Table 63: Change in *Ex Ante* and *Ex Post* Net kWh Impacts

Measure	Units Installed	SCE Gross Savings (kWh)	SCE Net Savings (kWh)	Evaluation Net Savings (kWh)	Difference between Evaluation & SCE Net Savings (%)
T8	52,788	7,857,849	7,543,535	3,928,924	-48
CFL	9,082	2,071,256	1,988,405	745,652	-63
LED Exit Sign	531	157,718	151,409	13,721	-91
Thermostat	73	23,871	22,916	2,077	-91
Total	62,474	10,110,693	9,706,265	4,690,375	-52

2004-05 SBEC Cumulative kW Impacts

A similar calculation was performed to determine net kW impacts, with the resulting adjustment factors shown in Table 64. In this case, the kW impacts are adjusted to account for changes to the coincident diversity factors and estimated free ridership from the billing analysis. The coincident adjustment factor is based on the logger data and derived load shapes discussed in the previous section of this report. The free ridership adjustment is based on the coefficient estimate from the billing analysis and assumes that the entire 13 percent difference from 1.0 is attributable to free ridership.

The *ex post* net realization rate is the product of the adjustment factors shown in Table 64. Changes to the coincident diversity factor were based on the operating hours data obtained during the on-site verifications. For the coincident diversity factor for CFLs, for example, we used the on-site value of 0.5 and divided it by an original value of 0.79 to get the current adjustment factor of 0.63. When combined with the free ridership adjustment, the total *ex post* net realization rate is 0.56 for CFLs, as shown in the far right column of Table 64. A similar calculation is done for T8s to derive an *ex post* net realization rate of 0.76. As mentioned previously, beyond the net impact analysis, no additional research was conducted to adjust the NTG ratio for exit signs and thermostats. The *ex post* net realization rate is therefore equal to the billing analysis free ridership for these measures.

Table 64: *Ex Post* Net Realization Rates for kW Impacts

Measure	Billing Analysis Free Ridership (1-FR)	Coincident Adjustment Factor	*Ex Post* Net Realization Rate
T8	0.87	0.87	0.76
CFL	0.87	0.63	0.55
Exit Sign	0.87	1	0.87
Thermostat	0.87	1	0.87

The factors shown above were used to calculate the *ex post* kW impacts, as shown in Table 65. The largest change from the *ex ante* impacts is for CFLs due to the lower coincident diversity factor derived from the on-site audit load shapes. As with the kWh impact tables, Table 65 shows the change from *ex ante* and *ex post* <u>net</u> impacts while Table 64 shows the adjustment from *ex ante* <u>gross</u> impacts to *ex post* <u>net</u> impacts.

Table 65: Changes in *Ex Ante* and *Ex Post* Net kW Impacts

Measure	Units Installed	SCE Gross Savings (kW)	SCE Net Savings (kW)	Evaluation Net Savings (kW)	Difference between Evaluation & SCE Net Savings (%)
T8	52,788	1,677	1,610	1,275	-21
CFL	9,082	442	424	243	-43
LED Exit Sign	531	18	17	16	-9
Thermostat	73	0	0	0	0
Total	62,474	2,138	2,052	1,534	-25

Finally, Table 66 presents the savings table required by the CPUC that shows the savings over time taking into account the expected useful life for each measure. Note that the savings values are adjusted both for the evaluation savings numbers discussed above as well as the significantly lower EUL value for CFLs (4.4 years rather than 16 years) based on the evaluation results. This program also had a late start and therefore all participation occurred in 2005. Annual savings for measures installed as part of the 2004-05 SBEC program decreases over time once the equipment life is exceeded.

Table 66: CPUC Impact Table Showing Cumulative Energy and Demand Savings Over Time

Program ID: 1313-04

Program Name: Southern California Edison Small Nonresidential Hard-to-Reach

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	0	0	0.00	0.00	0	0
2	2005	10,111	4,833	2.14	1.53	0	0
3	2006	10,111	4,833	2.14	1.53	0	0
4	2007	10,111	4,833	2.14	1.53	0	0
5	2008	10,111	4,833	2.14	1.53	0	0
6	2009	10,111	4,385	2.14	1.39	0	0
7	2010	10,111	4,087	2.14	1.29	0	0
8	2011	10,111	4,087	2.14	1.29	0	0
9	2012	10,111	4,087	2.14	1.29	0	0
10	2013	10,036	4,050	2.12	1.28	0	0
11	2014	10,036	4,050	2.12	1.28	0	0
12	2015	10,036	4,050	2.12	1.28	0	0
13	2016	10,036	4,050	2.12	1.28	0	0
14	2017	10,036	4,050	2.12	1.28	0	0
15	2018	10,036	4,050	2.12	1.28	0	0
16	2019	10,036	4,050	2.12	1.28	0	0
17	2020	10,036	4,050	2.12	1.28	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
TOTAL	**2004-2023**	161,177	68,374	2.14*	1.53*	0	0

* The gross and evaluation projected peak MW savings totals are the highest single annual MW reduction resulting from program activities.

5. CONCLUSIONS AND RECOMMENDATIONS

Based on the results presented in this report, we draw the following conclusions for the 2004-05 SBEC program evaluation.

- **Participation satisfaction with the SBEC program is very high.** In general, participants are very satisfied with the program overall, with the vast majority of respondents (85 percent) rating their satisfaction at an 8 or higher on a 10 point scale. In addition, participants also expressed high levels of satisfaction with the audit and equipment installation process. SBEC participants also expressed greater satisfaction with the program, overall, than did the 2003 Statewide Express Efficiency program participants.

- **Participation barriers for renters are being overcome by the SBEC program.** Renters comprise 71 percent of SBEC participants, which is much higher than the 51 percent observed for SCE's territory for the 2003 Express Efficiency program. Participant survey responses indicate that common barriers such as concern over bill savings and the potential hassle of obtaining a utility rebate are more pronounced for renters than building owners in the program. The fact that so many renters are participating in the program despite these concerns indicates that the current SBEC program has been very effective in addressing these issues.

- **The program has been successful in reaching non-English speaking customers.** Of the participants surveyed, 70 percent spoke a language other than English at their business. A portion of these were spoken to by the CBO or FBO in a language other than English, and 74 percent indicated that this was very important in their decision to participate.

- **Renters may have more influence over building energy decisions than originally assumed.** While most of the participants in the program rent their facilities, they still have a high level of involvement in the equipment decisions at the facility. Most renters (64 percent) indicated that they needed to get the building owner's permission before making energy efficiency improvements. Nevertheless, 58 percent of renters strongly disagreed with the statement they would not be at the location long enough to benefit from energy efficient investments. Most renters (54 percent) also strongly disagreed with the statement that it was not worth investing in energy efficiency because they did not own the building.

- **CBO/FBO involvement in the SBEC is also very important.** In our survey sample, 173 participants (29 percent) were recruited to the program by a CBO or FBO. Of these, 89 percent said that the CBO/FBO they worked with was very knowledgeable about the program and 84 percent indicated that they were very satisfied with their CBO/FBO.

Based on these conclusions, we offer the following recommendations for the SBEC program:

- **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. Furthermore, respondents in the nonparticipant survey indicated that they would be much more likely to participate in a direct install program offered by SCE compared with a rebate program. As long as the high satisfaction levels can be maintained and net savings are achieved, we see no reason why the current program design should be modified.

- **CFL EUL values need to be drastically reduced.** The current SBEC program uses a 16-year EUL for CFL lamps as this was the value submitted and approved in the Program Implementation Plan. This is undoubtedly too high as it is twice the eight-year EUL commonly assumed for CFLs in other commercial programs. Furthermore, the logger data collected in this evaluation indicates that the EUL is significantly lower than even the previously recommended value of eight years. Based on the adjusted annual operating hours (1881 hrs/year), and the average manufacturers EUL for the CFLs recorded as part of the logger study (8321 hrs/lamp), we recommend that the CFL EUL be changed to 4.4 years for SBEC participants.

- **Operating hour assumptions need to be revised for T8s and CFLs.** The current assumptions for annual operating hours are much higher than those derived from the logger data verification of on-site survey data. Once an operating hour adjustment is made, the realized net impacts are consistent with the *ex ante* values. This result was confirmed in the billing analysis, where the net realization rate for the combined savings variable (predominantly T8s and CFLs) was approximately the same as the *ex ante* net-to-gross ratio assumption once the adjustment for operating hours was made.

- **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 T8s and CFLs are higher than the results derived in the SBEC evaluation. 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 logger sites in the SBEC 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 T8s and CFLs.

- **Coincident diversity factor should be modified for CFLs and T8s.** The results of on-site verifications also produced load shapes that show a lower coincident diversity factor than that currently assumed for the program for both CFLs and T8s. This results in significantly lower kW impacts than originally anticipated for these measures.

APPENDIX: SURVEY INSTRUMENTS

SBEC PARTICIPANT SURVEY

PARTICIPANT INTRODUCTION

Q1. Hello, this is <INTERVIEWER NAME> calling from Quantum Consulting on behalf of Southern California Edison and Electric Company. This is not a sales call. May I please speak with [PROGRAM CONTACT]?

Our records show that your company received some energy-saving lighting equipment earlier this year through SCE's Small Business Energy Connection Program. We are calling to do a follow-up study about your firm's participation in this program. This information will help SCE to determine the energy savings achieved through the program and improve its services to small business customers like you. This survey will take about 15 minutes and all answers will remain confidential.

I was told you're the person most knowledgeable about this lighting installation.
Is this correct?

May we speak with the person most knowledgeable about this lighting installation that may have worked with the SCE technician from RHA?

[IF NO PROGRAM CONTACT]
Hello, this is <INTERVIEWER NAME> calling from Quantum Consulting on behalf of SCE. I need to speak with the person most knowledgeable about recent lighting equipment changes for your firm at this location.

[IF NEEDED] Our records show that your company received some energy-saving lighting equipment earlier this year through SCE's Small Business Energy Connection Program. We are calling to do a follow-up study about your firm's participation in this program. May we speak with the person most knowledgeable about this lighting installation? This survey will take about 15 minutes.

Screener

SAMPLE VARIABLES:

> **CFL_FLAG**
> **MEAS1-n**
> **CBO**

A5. Just to check, earlier this year did your business participate in SCE's Small Business Energy Connection Program at this location? [IF NEEDED] This is an SCE program where your business received a free energy audit to identify opportunities for you to save on your energy bill and then later some free energy-saving lighting equipment was installed by a lighting technician. [IF APPROPRIATE] You may have been involved with this program through [CBO].

1	Yes, participated in SBER as described	A20
2	Yes, participated in SBER, but at other location	A20
3	Yes, participated in SCE program, but don't recall that as the name	A15
4	NO, did NOT participate in SBER program	A10
5	NO, did NOT receive free equipment, but did receive audit/recommendations	A10
77	Other (specify)	A10
88	Refused	A10
99	Don't know	A10

A10. Is it possible that someone else at your [SERV_ADDR] actually dealt with the equipment installation?

1	Someone else dealt with it	A5
2	Installed EE measures (but do not recall rebate or program)	T&T
3	Participated in program/have not installed EE measures yet	T&T
77	Other (SPECIFY) _____	T&T
88	Refused	T&T
99	Don't know	T&T

A12. FOR THOSE THAT WERE RECRUITED BY CHARO, TITAN, OR FAME, ASK:
Our records show that you were recruited for this program by [CBO], is this correct?

1	Yes	A20
2	No	A20
88	Refused	A20
99	Don't know	A20

A15. OK, for the rest of the survey I'll be referring to your participation in the program called the Small Business Energy Connection Program.

A20. I'd like to confirm some information in SCE's database. Our records show that you had the following equipment installed through the Small Business Energy Connection Program. Is this correct?

NOTE: Verify measure and measure quantity. Note below any discrepancies in either measure description or measure quantity.

Quantity	Measure	
&M1	&MEAS1	
&M2	&MEAS2	
&M3	&MEAS3	
&M4	&MEAS4	
&M5	&MEAS5	
&M6	&MEAS6	
&M7	&MEAS7	
&M8	&MEAS8	
&M9	&MEAS9	
&M10	&MEAS10	

[ENTER IN NOTES IF THERE ARE DIFFERENCES]

Measure	
&DIFMEAS1	
&DIFMEAS2	
&DIFMEAS3	
&DIFMEAS4	
&DIFMEAS5	
&DIFMEAS6	
&DIFMEAS7	
&DIFMEAS8	
&DIFMEAS9	
&DIFMEAS10	

IF CFL_FLAG = 1, else skip to SAT 1

A33. When the CFLs were installed, what kind of lamp did you replace: incandescent or CFLs?
[ALLOW MULTIPLES]

1	Incandescent	A21
2	CFLs	A21
3	HID	A21
4	Mercury vapor	A21
5	Other [SPECIFY}	A21
88	Refused	A21
99	Don't Know	A21

A21. Were all <&M1/COUNTi> installed or were some of them placed in storage for later use?

1	All installed	A22
2	Some installed	A22
2	Some in storage	A22
3	All in storage	A22
88	Refused	A22
99	Don't Know	A22

IF A21 = 2

A22.   How many of <COUNTi> were installed?

A23. Why were they put in storage?

Ask for each Measure, repeat up to 3 measures:

SAT1. How satisfied have you been with the performance of the <&MEASn>. Would you say you are:

1	Very Satisfied	RET20
2	Somewhat Satisfied	RET20
3	Not at All Satisfied	RET20
88	Refused	RET20
99	Don't Know	RET20

If SAT1 = 2 or 3 then ask "Why did you say that?" Record answer verbatim.

RET20. Have any of those <&Mn> <&MEASn> failed or been removed?

1	Yes	RET60
2	No	A25
88	Refused	A25
99	Don't Know	A25

DISPLAY THE TOTAL COUNT to aid interviewer. MAY NEED DIFFERENT TEXT IF QUANTITY = 1.

[READ:]Let's distinguish between equipment that has failed versus been removed for other reasons.

RET60. Overall, how many of the <&M1> <&MEASn> that were installed have FAILED?
    IF NEEDED: 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.

0	None	RET70
HGONE	Enter number, from 1 to <COUNTi>	RET62
87	Answer as a percentage of <COUNTi>	RET62

| 88 | Refused | RET70 |
| 99 | Don't Know | RET70 |

IF MEASURE = CFL
RET62. Did you replace any of the failed CFLs?

1	Yes	RET64
2	No	RET70
88	Refused	RET70
99	Don't Know	RET70

IF MEASURE = CFL
RET64. Were they replaced with … [READ LIST]?

1	Incandescent bulbs	RET70
2	CFLs	RET70
3	Other – Specify	RET70
99	Don't Know/Unable to determine	RET70

RET70. Overall, how many of the <&M1> <&MEASn> that were installed have been removed for reasons other than the equipment failed?
> **IF NEEDED**: 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).

0	None	A25
HGONE	Enter number, from 1 to <COUNTi>	RET80d
87	Answer as a percentage of <COUNTi>	RET80d
88	Refused	A25
99	Don't Know	A25

RET80d. And can you recall why they were removed? Was it… [READ LIST]?

1	The color of the light	RET82
2	The brightness of the light	RET82
3	Savings not worth the effort	RET82
4	Remodeling disabled the installation	RET82
5	Type of business changed	RET82
6	Moved	RET82
7	Equipment upgrade	RET82
8	Other – RECORD VERBATIM	RET82
99	Don't Know/Unable to determine	RET82

IF MEASURE = CFL
RET82. Did you replace any of the removed CFLs?

1	Yes	RET84
2	No	A25
88	Refused	A25
99	Don't Know	A25

IF MEASURE = CFL
RET84. Were they replaced with …[READ LIST]

1	Incandescent bulbs	A25
2	CFLs	A25
3	Other - SPECIFY	A25
99	Don't Know/Unable to determine	A25

Program Awareness and Participation

Let's talk about your decision to participate in the program.

A25. How did you first become aware of the Small Business Energy Connection Program?

1	From the technician that did the audit	A36
2	Other businesses / word of mouth	A36
4	CHARO Community Development Corporation	A36
5	First African Methodist Episcopal Church (FAME) Renaissance	A36
6	Titan Foundation	A36
7	Other - SPECIFY	A36
99	Don't Know/Unable to determine	A36

IF RECRUITED BY TITAN, CHARO, OR FAME **AND** A12=1, ASK:
A36. When you talked with [CBO], did they explain the entire program participation process to you?

1	Yes	A37
2	No	A37
88	Refused	A37
99	Don't Know	A37

A37. Was the program information presented clearly by [CBO]?

1	Yes	A38
2	No	A38
88	Refused	A38
99	Don't Know	A38

A38. How knowledgeable was [CBO] about the program, were they….

1	Very knowledgeable	A39
2	Somewhat knowledgeable	A39
	Not very knowledgeable	A39
88	Refused	A39
99	Don't Know	A39

A39. Did [CBO] talk to you about the program using language other than English?

1	Yes	A40
2	No	A41
88	Refused	A41
99	Don't Know	A41

A40. If so, how important was this on your decision to participate, was it…

1	Very Important	A41
2	Somewhat Important	A41
3	Not at all Important	A41
99	DK	A41

A41. Besides the Small Business Energy Connection Program, are you aware of OTHER programs or resources provided by SCE that are designed to promote energy efficiency for businesses like yours: [IF YES] What types of programs can you recall? [RECORD ALL MENTIONS]

1	Express Efficiency	A45
2	Business energy audits	A45
3	Rebate (unspecified)	A45
4	No, not aware of any programs	A45
77	Other programs (SPECIFY) _____	A45
88	Refused	A45
99	Don't know	A45

A45. Why did your company participate in the Small Business Energy Connection Program? [DO NOT READ CATEGORIES; ACCEPT MULTIPLE S]

1	Acquiring the latest technology	PE11
2	Saving money on electric bills	PE11
3	To receive free lighting and other equipment	PE11
4	Replacing old or broken equipment	PE11
5	Because the program was sponsored by SCE	PE11
6	Energy crisis	PE11
7	Helping protect the environment	PE11
8	Previous experience with other SCE programs	PE11
9	Recommended by utility account reps	PE11
10	Recommended by contractors	PE11
11	Participation in previous years	PE11
12	Part of a broader facility remodeling/renovation	PE11
13	To understand more about how energy costs are determined	PE11
14	To learn more about ways to reduce energy costs	PE11
15	Recommended by neighboring business or friend	PE11
16	A competing business participated	PE11
77	Other (SPECIFY) _____	PE11
88	Refused	PE11
99	Don't know	PE11

PROGRAM EFFECTS

Now we would like to ask you some questions about your program experience.

PE11. Are you more or less likely to install energy-efficient products as a result of your experience with the program?

1	More likely	PE12
2	Less likely	PE13
3	Same	PE13
99	DK	PE13

IF PE11 = 1
PE12. What energy efficiency equipment are you more likely to install?

IF CFL_FLAG = 1
PE13. When your CFLs burn out or fail, will you replace them with CFLs or incandescent lamps?

1	CFLs	PE14
2	Incandescent	CON1
3	Both	CON1
4	Other	CON1
99	DK	CON1

PE14. What if SCE did not pay for any of the cost to install the CFLs? Would you still install CFLs?

1	Yes	PE15
2	No	PE15
99	DK	PE15

IF PE13 = 1
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	CON1
2	SOMEWHAT influential	CON1
3	NOT AT ALL influential	PE15A
99	DK	CON1

IF PE15 = 3
PE15A. Why do you say that?

CON1. During the audit, you were given additional low cost and no cost suggestions for additional energy conservation and savings [IF NEEDED: such as routinely turning off lights or setting the thermostat higher when using the air conditioning], which ones did you implement?

[CON20-P923]

[2002 : PART, NP]

1	Turn off office equipment such as PCs, monitors, printers and copiers when not in use.	CON6
2	Set thermostats lower when heating and higher when using the air conditioning	CON6
3	Schedule high electrical energy-use processes during off-peak periods.	CON6
4	Turn off any lights that are not being used, for example, unused offices and conference ro	CON6
5	Install separate switches for closet and office lights	CON6
6	Replace yellowed diffusers on light fixtures	
7	Install additional energy efficient lighting	CON6
8	Repair broken windows	CON6
9	Caulk and weather-strip doors and windows	CON6
10	Reduce hot water temperature	CON6
11	(If available) Use dimmer switches to lower lights	CON6
12	Set air conditioning thermostats to pre-cool spaces at off-peak times	CON6
13	Establish a system to alert employees of expected high demand days including, but not limited to E-mail, voice mail, or public address announcement to all employees	CON6
14	Turn off your computer if you are out of the office for more than a few minutes	CON6
15	Set computer to low power stand bye mode	CON6
16	Turn off personal appliances, such as coffee pots and radios	CON6
17	Use e-mail to distribute documents instead of faxes and copiers	CON6
18	Wear comfortable business attire. Dress appropriately for warmer temperatures	CON6
19	Trade in photocopiers for smaller, more energy-efficient models	CON6
20	Other (SPECIFY)	CON6
21	None	PE25
22	DK	PE25

CON6. How influential was the technician's recommendations and your experience with the Small Business Energy Connection Program in your decision to adopt?

1	VERY influential	PE25
2	SOMEWHAT influential	PE25
3	NOT AT ALL influential	PE25
99	DK	PE25

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?

1	Percentage	PE30

PE30. Using a scale from 1 to 10, where 1 means you aren't knowledgeable at all, and 10 means you are fully knowledgeable, how knowledgeable are you about energy efficiency products and how they'll perform?

#		PE33

PE33. How about your knowledge BEFORE participating in the Small Business Energy Connection Program, using the same scale

PE35

PE35. Now I'd like to read a brief series of statements and I'd 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'll 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 … [RANDOMIZE, READ AND OBTAIN A RATING FOR EACH. WHEN SEQUENCE COMPLETE, GO TO T5.]

[T1-P923]

1	When considering a new energy efficiency investment, I am concerned that the actual bill savings will be less than what was estimated.	REB1
	ave the information I need to make an informed decision about energy efficient investments.	REB1
3	There is too much time and hassle involved in selecting a qualified energy efficiency contractor.	REB1
4	Lack of financing is a barrier to our organization making energy efficiency investments that we want to make.	REB1
5	Getting a utility rebate is too much hassle.	REB1
6	I need the owner's consent to make improvements.	REB1
7	I'm not at this location for long	REB1
8	It's not worth investing because it's not my building	REB1
99	DK/Refused	REB1

INFLUENCE

Let's talk about your participation in the program and what influenced you to install high efficiency equipment.

REB1. In deciding to participate in the Small Business Energy Connection Program, how important was it to you that SCE sponsored the program? Would you say it was . . .

1	Very Important	REB2
2	Somewhat Important	REB2
3	Not at all Important	REB2
99	DK	REB2

IF RESPONDENT WAS RECRUITED BY CHARO, FAME, OR TITAN **AND** A12=1, ASK:

REB2. In deciding to participate in the Small Business Energy Connection Program, how important was it to you that [CBO] was involved with the program? Would you say it was . . .

1	Very Important	REB3
2	Somewhat Important	REB3
3	Not at all Important	REB3
99	DK	REB3

REB3. The technician provided you information to help you understand energy costs and ways to manage them. How important was this information in helping you decide to install the new equipment provided by the program? Would you say it was?

1	Very Important	REB10
2	Somewhat Important	REB10
3	Not at all Important	REB10
99	DK	REB10

Now we'd like to ask some questions specifically about the {MEAS_DESC} that you installed.

REB10. Before the SCE technician visited your facility, were you already considering installing [&MEASn]

1	Yes	REB50
2	No	REB50
88	Ref	REB50
99	DK	REB50

REB50. Regarding the [MEASn], which of the following three statements best describes the actions you would have taken had Small Business Energy Connection Program not been available: **:**

1	We would have bought NO equipment	SAT1
2	We would have bought the SAME **energy efficient** equipment	REB55
3	We would have bought standard equipment	SAT1
88	Refused	SAT1
99	Don't know	SAT1

IF REB50 = 2
REB55. When would you have bought [MEAS1] if the program had not provided it:

1	At the same time	REB 65
2	Within a year	REB 65
3	More than a year	REB 60
88	Refused	REB 65
99	Don't know	REB 65

IF REB55 = 3
REB60. How many years would you have waited before buying [MEAS1] if they had not been provided through the program??

1	Number of Years	REB 65
88	Refused	REB 65
99	Don't know	REB 65

REB65. Would you have purchased the same number of [MEAS1] as were installed through the program?

1	Yes, would have installed the same number	SAT1
2	No	SAT1
88	Refused	SAT1
99	Don't know	SAT1

SATISFACTION

We'd like to get a sense of your satisfaction with the program. Please rate your satisfaction with these factors as VERY, SOMEWHAT or NOT AT ALL satisfied.

SAT1	Overall satisfaction with the Small Business Energy Connection Program experience	
SAT30	Satisfaction with the **bill savings**	
SAT32	Satisfaction with the audit process	
SAT33	Satisfaction with the equipment installation process	
SAT36	Satisfaction with the workers that performed the installation	
SAT38	Satisfaction with [CBO] (CHARO/FAME/TITAN recruits only w/ A12=1)	

If rating for SAT32 < SAT33, ask:

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?

If rating for SAT33 < SAT32 ask:

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?

For any responses that indicate dissatisfaction (Score of 5 or less) ask

SAT44. Why do you say that?

SAT45. Other than what you already mentioned, were you at all dissatisfied with any other aspects of the program?

#		SAT50

SAT50. If yes: why?   [RECORD VERBATIM.]

Renter Battery

R1. How active a role does your business take in making lighting and climate control equipment purchase decisions at this facility?   [READ LIST.]

[Q7-P923]
[2002 : PART, NP]

1	Very active	R5
2	Somewhat active	R5
3	Slightly active	R5
4	Not active at all	R5
99	DK/NA/refused	R5

R5. Does your business own or lease the facility?

[Q3-P923]
[2002 : PART, NP]

1	Own	HR025
2	Lease/rent	R10
99	DK/NA/refused	R10

R10. How long is the term of your lease?

[R15-P923]
[2002 : PART, NP]

1	1 year	R15
2	2 years	R15
3	3 years	R15
4	4 years	R15
5	5 years	R15

6	6 years	R15
7	7 years	R15
8	8 years	R15
9	9 years	R15
10	10 years	R15
11	Greater than 10 years	R15
12	Month to month	R15
13	Other (Specify)	R15
99	DK/Refused	R15

R15. 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:

[R20-P923]
[2002 : PART, NP]

1	Not at all familiar	HR025
2	Somewhat familiar	HR025
3	Very familiar	HR025
99	DK/Refused	HR025

CFL OP HOURS

Now we'd like to talk about the hours that your business is open.

HR025. Are you typically open every day, Monday through Friday?

1	Yes	HR030
2	No	HR026
8	Refused	HR026
9	Don't Know	HR026

HR026. How many days are you closed Monday through Friday?

1	1	HR030
2	2	HR030
3	3	HR030
4	4	HR030
5	5	HR030
8	Refused	HR030
9	Don't Know	HR030

HR030. During what weekday hours are your INDOOR LIGHTS currently on?

1	On 24 Hrs	HR040
2	Never On	HR040
3	On part of the day	HR030b
88	Refused	HR040
99	Don't know	HR040

HR030b. Monday through Friday, your indoor lights are on from:

&HR30F	Hours on FROM (use 24 hour format eg 0700)	HR030c
88	Refused	HR040
99	Don't know	HR040

HR030c Monday through Friday, your indoor lights are on until:

&HR30F	Hours on UNTIL (use 24 hour format eg 0700)	HR040
88	Refused	HR040
99	Don't know	HR040

HR040. How about Saturdays?

1	On 24 Hrs	HR050
2	Never on	HR050
3	On part of the day	HR040b
4	Same as weekday lighting schedule	HR050
5	Open by appointment	HR050
88	Refused	HR050
99	Don't know	HR050

HR040b. On Saturday your indoor lights are on from:

&HR40F	Hours on FROM (use 24 hour format eg 0700)	HR040c
88	Refused	HR050
99	Don't know	HR050

HR040c On Saturday your indoor lights are on until:

&HR40F	Hours on UNTIL (use 24 hour format eg 0700)	HR050
88	Refused	HR050
99	Don't know	HR050

HR050. And Sundays?

1	Never On	F1
2	On 24 Hrs	F1
3	On part of the day	HR050b
4	Same as Saturday lighting schedule	F1
5	Same as Weekday lighting schedule	F1
6	Open by appointment	F1
88	Refused	F1
99	Don't know	F1

HR050b. On Sunday your indoor lights are on from:

&HR50F	Hours on FROM (use 24 hour format eg 0700)	HR050c
88	Refused	F1
99	Don't know	F1

HR050c On Sunday your indoor lights are on until:

&HR50T	Hours on UNTIL (use 24 hour format eg 0700)	F1
88	Refused	F1
99	Don't know	F1

FIRMOGRAPHICS

F1. Can you estimate the total square footage of your facility at this [SERV_ADDR] to be …?

[Q84-P923]

[2002 : PART, NP]

1	Less than 2,500 square feet	F5
2	2,500 but less than 5,000 square feet	F5
3	5,000 but less than 10,000 square feet	F5
4	10,000 but less than 20,000 square feet	F5
5	20,000 but less than 50,000 square feet	F5
6	50,000 but less than 100,000 square feet	F5
7	Ag/Non-facility – Outdoors	F5
99	Don't know	F5

F5. Which of the following categories describes the number of employees your firm has at this[SERV_ADDR]?
[Q83-P923]
[2002 : PART]

1	1 to 5	F12
2	6 to 10	F12
3	11 to 20	F12
4	21 to 50	F12
5	51 to 100	F12
6	Or, over 100	F12
9	[DO NOT READ:] DK/NA/refused	F12

F12. How long has your business been at this location?

F15. What is the main activity at your business?
[Q0-P923]
[2002 : PART]

1	Office	L5
2	Retail (non-food)	L5
3	College/university	L5
4	School	L5
5	Grocery store	L5
6	Convenience store	L5
7	Restaurant	L5
8	Health care/hospital	L5
9	Hotel or motel	L5
10	Warehouse	L5
11	Personal Service	L5
12	Community Service/Church/Temple/Municipality	L5
13	Industrial Process/Manufacturing/Assembly	L5
14	Condo Assoc/Apartment Mgmt	L5
15	Agriculture	L5
77	Other (SPECIFY)	L5
99	DK/Refused	L5

L5. Is a language other than English spoken at your business?

[2002 : PART, NP]

1	Yes	L10
2	No	F10
88	Refused	F10
99	Don't know	F10

L10. Other than English, what language is primarily spoken at your business? [ACCEPT MULTIPLES]

[2002 : PART, NP]

1	Spanish	F10
2	Chinese	F10
3	Korean	F10
4	Vietnamese	F10
5	Japanese	F10
6	Indian	F10
77	Other (SPECIFY)	F10
88	Refused	F10
99	Don't know	F10

F10. How many locations does your firm have in California?

[Q91-P923]
[2002 : PART, NP]

1	1	
2	2 to 4	
3	5 to 10	
4	11 to 25	
5	Over 25	
9	[DO NOT READ:] DK/NA/refused	

As you may know, the Small Business Energy Connection Program is an important component of SCE's ongoing efforts to save energy and reduce emissions, and your participation is much appreciated. In order to improve this program's performance, SCE wants to make an accurate measurement of the energy savings associated with this program by collecting and analyzing information from selected customers.

Based on your answers to the previous questions, you are a perfect candidate for this project. If you agree to participate, Quantum Consulting, on behalf of SCE will visit your business and quickly verify the installations of the measures you received through the Small Business Energy Connection Program are operating. The visit will take less than an hour.

Q11. Are you interested in participating in this project?
      If no, TNT

Q12.   What is the main business activity at this facility?

SCHEDULING APPOINTMENT

Great, our technician Jerry Middleton will be the person contacting you to schedule an appointment to visit your business.

I5.   Are you the person we should contact to set up the appointment?

1	Yes	I15
2	No	I10
88	Refused	I10
99	DK	I10

I10.   What is the name and phone number of the person we should contact to set up the appointment?

I15.   Our technician will also need to meet a representative of your company at this facility. Do you have the name and the phone number of the manager or facilities staff he should meet at <ADDRESS>?

I20.   Can you give any directions that would help Jerry find your business?

Thank you very much for helping SCE to improve its energy saving efforts. If you have any additional questions regarding this effort that I am unable to answer today, please call Jerry Middleton of Quantum Consulting at 1.800.531.0188 or Rich Pulliam at SC&E at (626) 302-8289.

SBEC NON-PARTICIPANT SURVEY

<OUTCOME1> Hello, this is %n calling on behalf of SOUTHERN CALIFORNIA EDISON, from ITRON ENERGY MANAGEMENT. THIS IS NOT A SALES CALL. May I please speak with the person at this location who is most knowledgeable about decisions affecting your energy using equipment such as cooling and lighting systems?

   (GO TO NEXT SCRN)_____

<TCONNAME> Who WOULD be the person at this location that is most knowledgeable about decisions affecting your energy using equipment such as cooling and lighting systems?

    ENTER NEW CONTACT NAME AND MOVE ON

+-+

<MAY_I> May I speak with him/her?

  Yes_____
  No (not available right now, set cb)_____

<INTRO3> Hello, my name is %n and I am calling on behalf of EDISON from ITRON ENERGY MANAGEMENT. THIS IS NOT A SALES CALL. Today we are conducting an important study on the needs and perceptions of firms like yours, how businesses like yours think about and manage their energy consumption.

   I was told you were the person most knowledgeable about decisions affecting the energy using equipment such as cooling and lighting at this location. Is this correct?

    Yes_____
    No_____

<PERSON> I N S T R U C T I O N   S C R E E N

    CONTACT is on the phone_____
    CONTACT NAME no longer works there_____
    CONTACT not available at this time_____
    NO CONTACT NAME WAS GIVEN_____

+---+
| Hello, my name is %n and I am calling on behalf of EDISON from |
| ITRON ENERGY MANAGEMENT. Today we are conducting an important study |
| on the needs and perceptions of businesses like yours, on how they |
| think about and manage their energy consumption. |
+---+

<TOLD> I was told you were the person most knowledgeable about decisions affecting the energy using equipment such as cooling and lighting at this location. Is this correct?

    Yes_____
    No_____
    NO ONE HERE WILLING TO DO SURVEY_____

```
+--------------------------------------------------------------------+
|       THANK  AND  TERM...YOU MUST TYPE IN NOTES explaining why this is a |
| legitimate refusal.                                                |
+--------------------------------------------------------------------+


+--------------------------------------------------------------------+
|       Before we start, I would like to inform you that for         |
|       quality control purposes, this call may be monitored by my   |
|       supervisor.                                                  |
+--------------------------------------------------------------------+


+--------------------------------------------------------------------+
|    This is a fact finding study only, we are not selling anything. Your |
| responses  will  not be connected with your business in any way. EDISON |
| wants  to better understand how businesses think about and manage their |
| energy consumption.                                                |
+--------------------------------------------------------------------+


<ADDR> Our records show that the address for this business is %5..
    Is that correct

    Yes_____
    No_____
    NO ADDRESS WAS GIVEN - THAT'S OKAY_____
    REFUSED_____
    DON'T KNOW_____


<CORRADDR> May I have your address?

+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+


<COMPARE> Are these address similar or totally different?
COMPUTER ADDRESS
CORRECTED ADDR

    Similar_____
    Totally different_____
+--------------------------------------------------------------------+
| EDISON is interested in conducting this study with the business located |
| at  %5.. Since our records are in error, we want to thank you for your |
| time as we have no further questions for you. THANK AND TERMINATE  |
+--------------------------------------------------------------------+


+--------------------------------------------------------------------+
|    One  way  that  businesses can reduce their energy use is to install |
| more  energy  efficient  equipment. Since  one  of  the  factors  that |
| influences  energy  use  is  the  kind  of lighting, cooling, and other |
| equipment a business uses, we would like to ask you about what kinds of |
| equipment  purchases  you  are  considering  or have made since January |
| 2002.                                                              |
+--------------------------------------------------------------------+


<E1A> If  you  wanted  to  save  money  on  your energy bills, What ENERGY
CONSUMING equipment would you consider purchasing?

    Lighting_____
    HVAC_____
    Specific business equipment_____
    Windows/Insulation/Doors_____
    Water heater/water saving devices_____
    Refrigeration_____
```

```
    Motors_____
    Solar_____
    Programmable thermostats_____
    Would not buy anything_____
     Compressor
     Washer/Dryer
    OTHER – SPECIFY_____
    REFUSED_____
    DON'T KNOW_____
```

<E1B> Is there another equipment purchase you would consider purchasing to
save money on your energy bills?

```
    Lighting_____
    HVAC_____
    Specific business equipment_____
    Windows/Insulation/Doors_____
    Water heater/water saving devices_____
    Refrigeration_____
    Motors_____
    Solar_____
    Programmable thermostats_____
    NOTHING ELSE_____
     Compressor
     Washer/Dryer
    OTHER – SPECIFY_____
    REFUSED_____
    DON'T KNOW_____
```

<E1C> Is there another equipment purchase you would consider purchasing to
save money on your energy bills?

```
    Lighting_____
    HVAC_____
    Specific business equipment_____
    Windows/Insulation/Doors_____
    Water heater/water saving devices_____
    Refrigeration_____
    Motors_____
    Solar_____
    Programmable thermostats_____
    NOTHING ELSE_____
     Compressor
     Washer/Dryer
    OTHER – SPECIFY_____
    REFUSED_____
    DON'T KNOW_____
```

<E1D> Is there another equipment purchase you would consider purchasing to
save money on your energy bills?

```
    Lighting_____
    HVAC_____
    Specific business equipment_____
    Windows/Insulation/Doors_____
    Water heater/water saving devices_____
    Refrigeration_____
    Motors_____
    Solar_____
    Programmable thermostats_____
    NOTHING ELSE_____
     Compressor
```

```
 Washer/Dryer
OTHER - SPECIFY_____
REFUSED_____
DON'T KNOW_____
```

<E1E> Is there another equipment purchase you would consider purchasing to
save money on your energy bills?

```
Lighting_____
HVAC_____
Specific business equipment_____
Windows/Insulation/Doors_____
Water heater/water saving devices_____
Refrigeration_____
Motors_____
Solar_____
Programmable thermostats_____
NOTHING ELSE_____
 Compressor
 Washer/Dryer
OTHER - SPECIFY_____
REFUSED_____
DON'T KNOW_____
```

<E1OTHER> You mentioned that you would consider purchasing specific
business equipment in order to save money on your energy bills. What types
of business equipment would you be considering?

```
RECORD OTHER_____
REFUSED_____
DON'T KNOW_____
```

<E5_1> Since January 2002, have you....Replaced incandescent bulbs with
Compact fluorescent screw in or hardwired bulbs? ?

```
Yes_____
No_____
REFUSED_____
DON'T KNOW_____
```

<E5_2> Since January 2002, have you....Replaced long T12 fluorescent tube
fixtures, with slimmer, more energy efficient T8 or T5 fluorescent tube
fixtures? ?

```
Yes_____
No_____
REFUSED_____
DON'T KNOW_____
```

<E5_3> Since January 2002, have you....Added Lighting sensors? ?

```
Yes_____
No_____
REFUSED_____
DON'T KNOW_____
```

<E5_4> Since January 2002, have you....Replaced old exit signs with energy
efficient LED exit signs? ?

```
        Yes_____
        No_____
        REFUSED_____
        DON'T KNOW_____
```

<CFL1> How many CFLS did you install?
     (5)88888 IS REFUSED   (5)99999 IS DON'T KNOW

```
                    +--+--+--+--+--+
```

<CFL2> What percent of the incandescent bulbs at your business did the CFLs
replace?

     101 IS REFUSED....102 IS DON'T KNOW

```
                         +--+--+--+
```

<SAT1> How satisfied have you been with the performance of the CFLs. Would
you say....

```
     Very satisfied_____
     Somewhat Satisfied_____
     Not at All satisfied_____
     REFUSED_____
     DON'T KNOW_____
```

<SAT1A> Why do you say that?

```
     Burn out too fast_____
     Insufficient Light_____
     Not enough savings_____
     Different from the rest_____
      Doesn't work in all sockets
      Aesthetic
      Hesitation
      Too expensive
     RECORD VERBATIM_____
     REFUSED_____
     DON'T KNOW_____
```

<RET20_1> Have any of those CFLs failed or been removed?

```
     Yes_____
     No_____
     REFUSED_____
     DON'T KNOW_____
```

```
+----------------------------------------------------------------------+
|      Let's  distinguish  between  equipment  that  has  failed  versus |
| equipment that has been removed.                                      |
|                                                                       |
|      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.                                           |
|                                                                       |
|      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 remodeling).                                                   |
+----------------------------------------------------------------------+
```

<RET60> Overall, how many of the CFLs that were installed have FAILED?

```
Count given_____
Percentage given_____
None_____
REFUSED_____
DON'T KNOW_____
```

<RT60CNT> Enter count that FAILED

```
                        +--+--+--+--+--+
```

<RT60PCT> Enter the percent that FAILED

```
                        +--+--+--+
```

<RET62> Did you replace any of the failed CFLs?

```
Yes_____
No_____
REFUSED_____
DON'T KNOW_____
```

<RET64> Were they replaced with...ACCEPT MULTIPLES

```
Incandescent bulbs_____
CFLs_____
OTHER-SPECIFY_____
REFUSED_____
DON'T KNOW_____
```

<RET70> Overall, how many of the CFLs that were installed were REMOVED?
...A LAMP HAS BEEN REMOVED if it was taken out of it original location when
it was still functional

```
Count given_____
Percentage given_____
None_____
REFUSED_____
DON'T KNOW_____
```

<RT70CNT> Enter count that were REPLACED

```
                        +--+--+--+--+--+
```

<RT70PCT> Enter the percent that were REPLACED

```
                        +--+--+--+
```

<RET80> Can you recall why they were removed. OKAY TO PROMPT

```
The color of the light_____
The brightness of the light_____
Savings not worth the effort_____
Remodeling disabled the installation_____
Type of business changed_____
```

```
Moved_____
Equipment upgrade_____
OTHER - SPECIFY_____
REFUSED_____
DON'T KNOW_____
```

<RET82> Did you replace any of the REMOVED CFLs?

```
Yes_____
No_____
REFUSED_____
DON'T KNOW_____
```

<RET84> Were they replaced with...ACCEPT MULTIPLES

```
Incandescent bulbs_____
CFLs_____
OTHER-SPECIFY_____
REFUSED_____
DON'T KNOW_____
```

<T1> How many T8 or T5 fluorescent tube fixtures did you install. This would be the entire fixture, not the number of lamps?

```
    8888 IS REFUSED....9999 IS DON'T KNOW
```

<T2> How many lamps did each fixture have ON AVERAGE?
    CHOOSE ONLY 1 THROUGH 4, WHATEVER IS MOST PREDOMINANT.

```
    1_____
    2_____
    3_____
    4_____
    OTHER - SPECIFY_____
    REFUSED_____
    DON'T KNOW_____
```

<T3> What percent of the old T-12 fluorescent tube fixtures at your business did you replace with the slimmer T5 or T8 fixtures? Your best guess is okay.

```
    101 IS REFUSED.....102 IS DON'T KNOW
```

                              +--+--+--+

<SAT11> How satisfied have you been with the performance of the T8 or T5 fixtures? Would you say you are.....

```
    Very Satisfied_____
    Somewhat Satisfied_____
    Not at All Satisfied_____
    REFUSED_____
    DON'T KNOW_____
```

<WHY11> Why did you say that?

```
    Burn out too quickly_____
    Insufficient light_____
     Don't see savings
```

```
     Haven't paid attention
     No difference
     Too bright
     RECORD VERBATIM_____
     REFUSED_____
     DON'T KNOW_____


<E30> Have you considered changing lighting in the last 2 years?

     Yes_____
     No_____
     REFUSED_____
     DON'T KNOW_____


<E35> Why did you decide not to change your lighting?

     Not Broken_____
     Too expensive_____
     Did not find right style_____
     Remodeling_____
     Too busy
     Rent/Lease facility
     Unknowledgeable
     Moving
     Don't use it enough
     Inadequate light
     Program ended
     They never came back to install them
     Thinking about it
     OTHER- SPECIFY_____
     REFUSED_____
     DON'T KNOW_____


<E40>  Who  was most influential in helping you make the decision to change
lighting equipment? [MULTIPLES]

     Energy Equipment Contractors & Installers (e.g. Lighting, HVAC)
     Energy Service Companies (ESCOs)_____
     SCE your electric utility_____
     Equipment manufacturers_____
     Corporate decision_____
     Corporate Management_____
     Made decision on my own_____
     In-house staff_____
     TV Radio Newspaper advertising_____
     Store sale_____
     Internet_____
     Salesman
     Friend/Family member
     Electrician
     RECORD VERBATIM_____
     REFUSED_____
     DON'T KNOW_____


<SAT13>  How  satisfied  have you been with the performance of the lighting
sensors? Would you say you are....

     Very satisfied_____
     Somewhat Satisfied_____
     Not at All satisfied_____
     REFUSED_____
```

```
       DON'T KNOW_____


<WHY13> Why do you say that?

       Insufficient lighting_____
       Burned out_____
        Some failed
        Thought savings would be bigger
        Don't think about it
        Too sensitive
        Not sensitive enough
       RECORD VERBATIM_____
       REFUSED_____
       DON'T KNOW_____


<SAT14>  How  satisfied  have you been with the performance of the LED exit
signs? Would you say you are....

       Very satisfied_____
       Somewhat Satisfied_____
       Not at All satisfied_____
       REFUSED_____
       DON'T KNOW_____


<WHY14> Why do you say that?

       Insufficient lighting_____
       RECORD VERBATIM_____
       REFUSED_____
       DON'T KNOW_____

<V1>  Did  you use a contractor, engineering firm or other service provider
       to design or install the new lighting equipment?

       Contractor_____
       Engineering firm_____
       Energy services firm_____
       Did not use external service provider_____
        Edison
       OTHER- SPECIFY_____
       REFUSED_____
       DON'T KNOW_____


<SAT40>  Overall,  how  satisfied  were you with the equipment installation
process? Would you say you are....

       Very satisfied_____
       Somewhat Satisfied_____
       Not at All satisfied_____
       REFUSED_____
       DON'T KNOW_____


<WHY40> Why do you say that?

       Faulty equipment_____
        Always room for improvement
        Expensive
        Hard to find replacement bulbs
       RECORD VERBATIM_____
       REFUSED_____
```

```
        DON'T KNOW_____


    +------------------------------------------------------------------------+
    |       Next, I'm  going  to ask you about actions that your business may  |
    | have taken to reduce or manage your energy use.                         |
    +------------------------------------------------------------------------+


    <CON1>  Other  than  installing  new  equipment,  Have you taken any energy
    conservation  actions since January 2002 to reduce your overall energy use,
    such  as routinely turning off lights or setting the thermostat higher when
    using the air conditioning?

        Yes_____
        No_____
        REFUSED_____
        DON'T KNOW_____


    <CON5> What energy conservation actions have you taken since January 2002?

      Turn off office equip (PCs monitors printers copiers) when not in use
      Set thermostats lower when heating /higher when using air conditioning
      Schedule high electrical energy-use processes during off-peak periods
      Turn off lights not being used (unused offices and conference rooms)
      Install separate switches for closet and office lights
      Replace yellowed diffusers on light fixtures
      Install additional energy efficient lighting
      Repair broken windows
      Caulk and weather-strip doors and windows
      Reduce hot water temperature
      Use dimmer switches to lower lights
      Set air conditioning thermostats to pre-cool spaces at off-peak times
      Establish System to Alert employees of expected high demand days
      Turn off computer if out of the office for more than a few minutes
      Set computer to low power stand bye mode
      Turn off personal appliances (coffee pots and radios)
      Use email to distribute documents instead of faxes and copiers
      Wear comfortable clothes...Dress appropriately for warmer temperatures
      Trade in photocopiers for smaller more energy-efficient models
      Delamping
      Maintenance of equipment
      Use AC ONLY when necessary
      Timers on appliances
      Monitor equipment
      Use FANS to cool
       Bought thermostat
       Installed timer
       Bought EE equipment
       Cover the windows
      RECORD VERBATIM
      REFUSED
      DON'T KNOW


    <CON20>  By roughly how much do you think the conservation actions you have
    taken have reduced your overall energy usage? Would you say...

        0 to 5 percent_____
        6 to 10 percent_____
        11 to 15 percent_____
        16 to 20 percent_____
        21 to 30 percent_____
        More than 30 percent_____
```

REFUSED_____
DON'T KNOW_____

<CON30> What were the most important reasons that you took energy conservation actions to reduce your energy use?

    Lower energy (operating) cost_____
    Shift load to off-peak hours_____
    Help avoid blackouts_____
    There weren't any reasons_____
    ENERGY CRISIS - Civic Duty_____
     Comfort
     Save energy
     Expansion
    RECORD VERBATIM_____
    REFUSED_____
    DON'T KNOW_____

<R1> How active a role does your business take in decisions for purchasing lighting and climate control equipment at this facility? Would you say you are.....

    Very active -involved in all phases and have veto power
    Somewhat active - we approve decisions and provide some input and review
    Slightly active - we have a voice but it's not the dominant voice
    Not at all active - our firm doesn't get involved in these issues
    REFUSED_____
    DON'T KNOW_____

<R5> Does your business own or lease the facility?

    Own_____
    Lease/Rent_____
    OTHER_____
    REFUSED_____
    DON'T KNOW_____

<R10> How long is the term of your lease?

    1 year_____
    2 years_____
    3 years_____
    4 years_____
    5 years_____
    6 years_____
    7 years_____
    8 years_____
    9 years_____
    10 years_____
    Greater than 10 years_____
    Month to Month_____
    OTHER - SPECIFY_____
    REFUSED_____
    DON'T KNOW_____

<R15> 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...

    Not at all familiar_____
    Somewhat familiar_____

```
Very familiar_____
REFUSED_____
DON'T KNOW_____
```

<A1> Are you aware of EDISON's Small Business Energy Connection Program?

```
Yes_____
No_____
REFUSED_____
DON'T KNOW_____
```

<A2> The Small Business Energy Connection is a program offered by EDISON where a utility-affiliated contractor performs an energy audit of your building and then returns at a later date to install energy conservation measures such as high efficiency lighting for free. Before this survey, had you ever heard of EDISON's Small Business Energy Connection Program?

```
Yes_____
No_____
REFUSED_____
DON'T KNOW_____
```

<A3> Have you ever been approached by a contractor to have an energy audit done in order to participate in this program?

```
Yes_____
No_____
REFUSED_____
DON'T KNOW_____
```

<A3_DO> Did you go ahead and do the audit?

```
Yes_____
No_____
REFUSED_____
DON'T KNOW_____
```

<A4> Why did you choose NOT to have the audit done?

```
Not worth the hassle_____
Did not believe savings claims_____
Did not believe program was really free___
Did not want business disrupted_____
Did not own building/Don't have authorization to make changes
Did not trust auditor_____
Already had an audit_____
Already Energy Efficient_____
OTHER - SPECIFY_____
REFUSED_____
DON'T KNOW_____
```

<A5> Are you aware of EDISON's Express Efficiency rebate program?

```
Yes_____
No_____
REFUSED_____
DON'T KNOW_____
```

<A10> Express efficiency is a program offered by your utility where business like yours receive a rebate for installing one or more

energy-efficient products. Before this survey, had you ever heard of
EDISON's Express Efficiency Program?

    Yes_____
    No_____
    REFUSED_____
    DON'T KNOW_____

<A15> Since January 2002, did your firm participate in EDISON's Express
Efficiency REBATE program at this location?

    YES Participated in Express Efficiency as described
    YES participated in Express Efficiency but at OTHER location
    YES participated in a UTILITY Program but don't recall name
    NO did NOT participate in EXPRESS EFFICIENCY program
    NO did NOT receive REBATE but DID participate in Program
    OTHER - SPECIFY_____
    REFUSED_____
    DON'T KNOW_____

+--+
| |
| |
| Next I'd like to ask you about your knowledge and attitudes toward |
| energy efficiency and various sources of energy efficiency information. |
+--+

<PE15> How likely will you be to ACTIVELY consider energy-efficient
products when installing or replacing energy-using products for your
business in the future? Please give me a rating from 1 to 10 where 10 means
you are EXTREMELY LIKELY to consider energy-efficient products and 1 means
you are NOT AT ALL LIKELY to consider energy-efficient products.

    1 NOT AT ALL LIKELY_____
    2_____
    3_____
    4_____
    5_____
    6_____
    7_____
    8_____
    9_____
    10 EXTREMELY LIKELY_____
    REFUSED_____
    DON'T KNOW_____

<PE12> What energy efficiency equipment are you more likely to install?
     Try to get specific information....for example, if they say they would
change the LIGHTING, ask what LIGHTING equipment would you change?

    Lights_____
    HVAC_____
    Appliances/office equipment_____
     Compressors/Pumps/Motors
     Sensors/Switches
     Thermostat
     Windows
     Nothing
    RECORD SPECIFIC EQUIPMENT NAME_____
    REFUSED_____
    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'll perform?

    1 NOT AT ALL KNOWLEDGEABLE_____
    2_____
    3_____
    4_____
    5_____
    6_____
    7_____
    8_____
    9_____
   10 FULLY KNOWLEDGEABLE_____
   REFUSED_____
   DON'T KNOW_____


+----------------------------------------------------------------------+
|     Now  I  would like to read 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. You may use any number from 1 and 10.                    |
+----------------------------------------------------------------------+


<PE35A> When considering a new energy efficiency investment, I am concerned
that the actual bill savings will be less than what was estimated.

    1 DISAGREE COMPLETELY_____
    2_____
    3_____
    4_____
    5_____
    6_____
    7_____
    8_____
    9_____
   10 AGREE COMPLETELY_____
   REFUSED_____
   DON'T KNOW_____


<PE35B>  I don't have the information I need to make an informed decision
about energy efficient investments.

    1 DISAGREE COMPLETELY_____
    2_____
    3_____
    4_____
    5_____
    6_____
    7_____
    8_____
    9_____
   10 AGREE COMPLETELY_____
   REFUSED_____
   DON'T KNOW_____


<PE35C> There is too much time and hassle involved in selecting a qualified
energy efficiency contractor.
```

```
1 DISAGREE COMPLETELY_____
2_____
3_____
4_____
5_____
6_____
7_____
8_____
9_____
10 AGREE COMPLETELY_____
REFUSED_____
DON'T KNOW_____
```

<PE35D> Lack of financing is a barrier to our organization making energy efficiency investments that we want to make.

```
1 DISAGREE COMPLETELY_____
2_____
3_____
4_____
5_____
6_____
7_____
8_____
9_____
10 AGREE COMPLETELY_____
REFUSED_____
DON'T KNOW_____
```

<PE35E> Getting a utility rebate is too much hassle.

```
1 DISAGREE COMPLETELY_____
2_____
3_____
4_____
5_____
6_____
7_____
8_____
9_____
10 AGREE COMPLETELY_____
REFUSED_____
DON'T KNOW_____
```

<PE35F> It is not worth investing because it's not my building.

```
1 DISAGREE COMPLETELY_____
2_____
3_____
4_____
5_____
6_____
7_____
8_____
9_____
10 AGREE COMPLETELY_____
REFUSED_____
DON'T KNOW_____
```

```
+-----------------------------------------------------------------------+
|      Information on energy efficiency can come from a number of |
| different sources. How would you prefer to receive energy-related |
| information? Please rate the following sources on a 1 to 10 scale, |
| where 1 means NOT AT ALL DESIRABLE and 10 means HIGHLY DESIRABLE. |
+-----------------------------------------------------------------------+
```

<PE40_1> INTERNET....how desirable would it be to receive energy-related
information via...

```
   1 NOT AT ALL DESIRABLE_____
   2_____
   3_____
   4_____
   5_____
   6_____
   7_____
   8_____
   9_____
   10 HIGHLY DESIRABLE_____
   REFUSED_____
   DON'T KNOW_____
```

<PE40_2> DIRECTLY FROM CONTRACTOR....how desirable would it be to receive
energy-related information via...

```
   1 NOT AT ALL DESIRABLE_____
   2_____
   3_____
   4_____
   5_____
   6_____
   7_____
   8_____
   9_____
   10 HIGHLY DESIRABLE_____
   REFUSED_____
   DON'T KNOW_____
```

<PE40_3> AT A COMMUNITY EVENT or TRADE ORGANIZATION MEETING...how desirable
would it be to receive energy-related information via...

```
   1 NOT AT ALL DESIRABLE_____
   2_____
   3_____
   4_____
   5_____
   6_____
   7_____
   8_____
   9_____
   10 HIGHLY DESIRABLE_____
   REFUSED_____
   DON'T KNOW_____
```

<PE40_4> AS PART OF AN AUDIT RECOMMENDATION...how desirable would it be to
receive energy-related information via...

```
   1 NOT AT ALL DESIRABLE_____
   2_____
   3_____
```

```
4_____
5_____
6_____
7_____
8_____
9_____
10 HIGHLY DESIRABLE_____
REFUSED_____
DON'T KNOW_____
```

<PE40_5> PRINTED MATERIALS FROM YOUR UTILITY...how desirable would it be to
receive energy-related information via...

```
1 NOT AT ALL DESIRABLE_____
2_____
3_____
4_____
5_____
6_____
7_____
8_____
9_____
10 HIGHLY DESIRABLE_____
REFUSED_____
DON'T KNOW_____
```

```
+---------------------------------------------------------------------+
|     Now  for  the  last  three statements with this scale where where 1 |
| means EXTREMELY UNLIKELY and 10 means you are EXTREMELEY LIKELY, please |
| indicate  the  likelihood  of your business installing Energy Efficient |
| lighting under the following conditions.                            |
+---------------------------------------------------------------------+
```

<PE50_1> IN THE NEXT YEAR, MY BUSINESS WILL HIRE A LIGHTING CONTRACTOR TO
INSTALL ENERGY EFFICIENT LIGHTING?

```
1 EXTREMELY UNLIKELY_____
2_____
3_____
4_____
5_____
6_____
7_____
8_____
9_____
10 EXTREMELY LIKELY_____
REFUSED_____
DON'T KNOW_____
```

<PE50_2>   MY BUSINESS WILL INSTALL ENERGY EFFICIENCY LIGHTING IF A
CONTRACTOR APPROACHES MY BUSINESS AND OFFERS TO DO THE INSTALLATION AT A
DISCOUNTED PRICE THROUGH AN EDISON REBATE PROGRAM.

```
1 EXTREMELY UNLIKELY_____
2_____
3_____
4_____
5_____
6_____
7_____
8_____
9_____
```

```
    10 EXTREMELY LIKELY_____
    REFUSED_____
    DON'T KNOW_____
```

<PE50_3> MY BUSINESS WILL INSTALL ENERGY EFFICIENCY LIGHTING IF AN EDISON
AFFILIATED CONTRACTOR APPROACHES ME AND OFFERS TO DO THE INSTALLATION FOR
FREE.

```
     1 EXTREMELY UNLIKELY_____
     2_____
     3_____
     4_____
     5_____
     6_____
     7_____
     8_____
     9_____
    10 EXTREMELY LIKELY_____
    REFUSED_____
    DON'T KNOW_____
```

```
+----------------------------------------------------------------------+
|    We  are  almost  finished. Just a few questions about your business. |
|  FIRST....                                                            |
+----------------------------------------------------------------------+
```

<F1> Can you estimate the total INDOOR square footage of your facility at
this location? Is it...

```
    Less than 2,500 square feet_____
    2,500 but less than 5,000 square feet_____
    5,000 but less than 10,000 square feet_____
    10,000 but less than 20,000 square feet____
    20,000 but less than 50,000 square feet____
    50,000 but less than 100,000 square feet___
    Ag/Nonfacility – Outdoors_____
    OVER 100,000 square feet_____
    REFUSED_____
    DON'T KNOW_____
```

<F5> Which of the following categories describes the number of employees
your firm has at this location?

```
    1 to 5_____
    6 to 10_____
    11 to 20_____
    21 to 50_____
    51 to 100_____
    Or, over 100_____
    REFUSED_____
    DON'T KNOW_____
```

<F10> How many locations does your firm have in CALIFORNIA?

```
    1_____
    2 to 4_____
    5 to 10_____
    11 to 25_____
    Over 25_____
    REFUSED_____
```

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DON'T KNOW_____

<F12> How many years has your business been at this location?

    88 IS REFUSED   99 IS DON'T KNOW

                                     +--+--+

<F15> What is the main activity at your business

    Office_____
    Retail (non-food)_____
    College/university_____
    School_____
    Grocery store_____
    Convenience store_____
    Restaurant_____
    Health care/hospital_____
    Hotel or motel_____
    Warehouse_____
    Personal Service_____
    Community Service/Church/Temple/Municipality
    Industrial Process/ Manufacturing/Assembly
    Condo Assoc/Apartment Mgmt_____
    Agriculture_____
    Auto repair
    Other_____
    REFUSED_____
    DON'T KNOW_____

<L5> Is a language other than English spoken to conduct business at your facility?

    Yes_____
    No_____
    REFUSED_____
    DON'T KNOW_____

<L10> Other than English, what languages are spoken to conduct business at your facility?

    Spanish_____
    Chinese_____
    Korean_____
    Vietnamese_____
    Japanese_____
    Indian_____
    Arabic
    Armenian or Farsi
    Mandarin
    Cantonese
    Taiwanese
    OTHER_____
    REFUSED_____
    DON'T KNOW_____

<VERNAME> For verification purposes only, may I please have your first name?

    +-+

```
<GENDER> BY OBSERVATION ONLY...

   Male_____
   Female_____

   +-------------------------------------------------------------------------+
   |         GOODBYE. Those are all the questions I have for you today.   |
   | On behalf of EDISON, thank you very much for your time and cooperation. |
   +-------------------------------------------------------------------------+
```