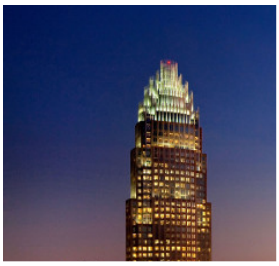
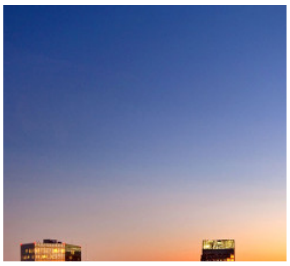
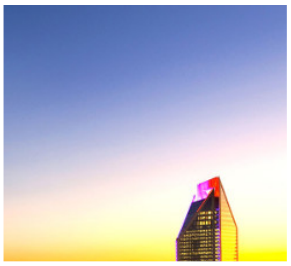


2015 NONRESIDENTIAL ESPI DEEMED LIGHTING IMPACT EVALUATION

Final Report

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California Public Utilities Commission

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1 EXECUTIVE SUMMARY

1.1 NEED FOR STUDY

For decades, the California investor owned utilities (IOUs) have offered energy efficiency programs. These programs attempt to influence customers to install energy efficient equipment (such as light-emitting diode (LED) lighting) by providing information, rebates, and other forms of monetary incentives. Over time, the California Public Utilities Commission (CPUC) developed various mechanisms for the IOUs to recover some or all of the costs spent on these programs. In addition, the CPUC developed mechanisms for rewarding the IOUs by providing monetary incentives based on the performance of their programs.

In 2013, the CPUC developed the Efficiency Savings and Performance Incentive (ESPI) mechanism,[1] which lays out various ways the IOUs can receive monetary incentives for the performance of their programs. One component of this mechanism is based on how much energy savings are derived over the life of the energy efficient equipment or measures, that were installed through the programs.

Savings claimed by these IOU programs were developed and refined over the past few decades. Significant research was conducted to develop algorithms to estimate the energy saved by installing a given energy efficiency measure. Some measures are relatively straightforward with respect to the equipment and the circumstances under which they are installed (such as an 11-watt LED lamp in a retail establishment). Other measures are very complex and are installed under more unique circumstances (such as a variable speed motor in a manufacturing plant that is capable of running at lower speeds).

For the more straightforward measures, savings values are developed on a per-unit basis, and programs claim these "deemed" savings based on the number of units installed. This is referred to as the deemed approach for calculating savings by a program. For example, savings for a single 11-watt LED lamp in a retail establishment is a unit, which has been deemed to save 285 kWh over the five-year life of the measure. For the more complex and custom measures, savings are calculated individually for each piece of equipment installed. This is referred to as the calculated approach for estimating savings by a program.

This study evaluates a subset of the deemed measures with high levels of uncertainty that were offered by the 2015 IOU energy efficiency programs. The study then develops revised savings estimates to support the ESPI mechanism. The specific measures studied, the general approach to developing savings,

[1] D.13.09.023, Decision Adopting Efficiency Savings and Performance Incentive Mechanism.

the resulting evaluated savings values, and recommendations related to these measures are discussed below.

1.2 ENERGY EFFICIENCY MEASURES STUDIED

The amount of energy savings claimed by these programs, the incentive levels paid, and to whom these incentives are paid vary by the type of program. In 2015, approximately 185 IOU energy efficiency programs claimed savings. As mentioned above, some programs use a deemed approach to estimating savings, while others use a calculated approach. Some programs focus on residential customers, and others focus on nonresidential customers (commercial, industrial, and agricultural customers). Some programs paid incentives "downstream" directly to the customer installing the equipment. Other programs paid incentives either "upstream" or "midstream" to manufacturers and distributors of the energy efficient equipment that was installed.

This study focuses on evaluating the savings that are claimed by nonresidential programs, pay incentives downstream to customers and midstream to distributors, and estimate savings using the deemed approach. Therefore, this study is evaluating nonresidential downstream and midstream deemed IOU measures. Upstream lighting measures are covered under a separate evaluation along with residential lighting measures.

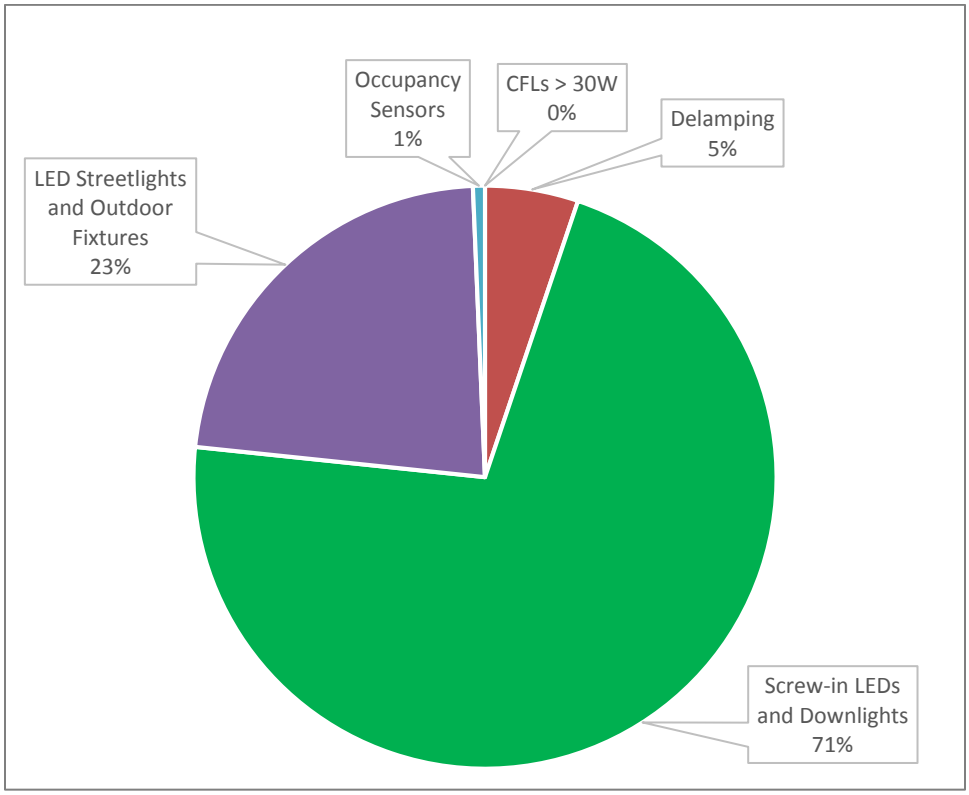
This study is focused only on evaluating the five deemed lighting measure categories offered to nonresidential program participants that paid incentives as follows:

- Downstream screw-in compact fluorescent lamps (CFLs) with wattage values greater than 30W
- Downstream and midstream screw-in LED lamps including downlight replacement kits[2]
- Downstream occupancy sensor lighting controls
- Downstream removal (delamping) of T12 lamps in existing multi-lamp linear fluorescent fixtures
- Downstream LED streetlights and outdoor area lighting

These measures represent roughly 7.5% of the total kWh energy savings claimed by all IOU program measures in the state, over the life of the measures (referred to as lifecycle savings). Figure 1-1 presents the distribution of kWh energy savings across the five studied measures. Over two-thirds of the savings is associated with screw-in LEDs, including downlight replacement kits.

[2] Only LED Lamps by PG&E are incented midstream.

FIGURE 1-1: DISTRIBUTION OF KWH ENERGY SAVINGS ACROSS STUDIED MEASURES



1.3 APPROACH

The study's objective is to evaluate the IOU's deemed savings claim for the five nonresidential deemed lighting measures and to conduct research that develops revised estimates of savings. This study looks at the energy (kWh) and demand (kW) savings provided over the lifetime of these measures.

This study examined each of the parameters that make up the energy and demand savings separately: installed measure counts, annual hours of operation, and changes in wattages (or changes in annual operating hours and the amount of controlled wattages for occupancy sensors). For some of the evaluated measures, all of these parameters were studied, and for other measures only some were studied.

Various techniques were used to study each parameter. For some measures, customers were visited on site to collect information to support the energy savings calculations. In some instances, monitoring equipment was installed on the new lighting systems in order to measure the number of hours the lights are on. Another key on-site activity collected information on the make and model numbers of the lamps or fixtures installed so that wattage values could be determined from manufacturer specifications.

The evaluation compares the initial savings claim made by the programs using the deemed savings values to the evaluation's results developed using the data collected on site. The initial savings are often times referred to as ex ante savings, because these are the savings values before (ex ante) the evaluation is conducted. The evaluation savings values are then referred to as the ex post savings, because these are the savings values developed after (ex post) the evaluation.

The ratio of the ex post (evaluation estimated) to ex ante (deemed program claim) savings is referred to as the "realization rate," or the rate at which ex ante savings are realized through the evaluation. From the representative on-site sample, the evaluation can determine an average realization rate for a specific measure. Then, this realization rate is applied back to the entire population of participants to estimate ex post savings for the full population of participants.

The evaluation also examines how successful the IOU programs were in influencing customers to install energy efficient measures that would not have been installed if the programs had not existed. Customers that would have installed the same energy efficient equipment in the absence of the program are considered free riders. They are referred to as free riders because they are receiving incentives from the programs for actions they would have undertaken without the program's existence. Therefore, the evaluation examines both the "gross" amount of savings derived among all participants, and the savings that is generated "net" of free riders.

This evaluation developed estimates of the ratio between the net and gross levels of savings (the net-to-gross ratio or NTGR). To estimate the NTGR, a representative sample of participants are telephone surveyed and asked several questions regarding the program's influence on their decision to install the energy efficient equipment. The survey examines various factors related to the program and other non-program factors. The survey also examines what the customer would likely have done in the absence of the program.

These survey question responses determine how likely the program has influenced the customer's decision to install the program, and conversely, how likely the participant was a free rider. For the sample of telephone surveyed participants, the NTGR is estimated as the ratio of the sample's total savings that is net of free ridership to the total gross savings. The NTGR, which is based on a representative sample of customers, can then be multiplied by the programs overall gross savings value to estimate the programs overall net savings value.

The ultimate goal of this evaluation is to estimate ex post net lifecycle energy and demand savings. This value is the savings estimated by the evaluation (ex post), which is generated by the program over the life of the measures (lifecycle) that are installed, minus (net) the free riders.

All measures were included in the telephone survey and had an NTGR estimated. For measures that did not have on-site visits, ex post gross savings values were not developed. Instead, the ex ante gross savings values were used (or "passed through"). These "passed through" savings values were multiplied by the NTGR to develop ex post net savings values.

For one measure, CFLs greater than 30 watts, no evaluation was conducted because of the small number of participants and low corresponding population ex ante savings. Therefore, for this measures, both ex ante gross and net savings values were passed through.

The following table presents which measures had on-site and telephone surveys performed, and whether ex post gross and net savings values were calculated or passed through. Note that the LED Outdoor and Streetlighting measure category has been broken into two sub categories because on-site visits were only performed for outdoor fixtures.

TABLE 1-1: DATA COLLECTION AND ANALYSES CONDUCTED BY MEASURE

2015 ESPI Measure	Onsites	Phone Surveys	Gross	NTG
CFL >30W	No	No	Pass Through	Pass Through
Delamping	No	Yes	Pass Through	Yes
Indoor LED	Yes	Yes	Calculated	Yes
LED Outdoor Fixtures	Yes	Yes	Calculated	Yes
LED Streetlights	No	Yes	Pass Through	Yes
Occupancy Sensors	No	Yes	Pass Through	Yes

The evaluation set in place specific sampling targets for both the on-site verification and phone surveys in order to develop ex post impacts that were representative of the population of program participants. Table 1-2 presents the data collection activity for each measure along with the sampling target and the achieved data collection totals. This table is similar to the one above except that the sampling targets and achieved data collection are presented by IOU.[3] The phone survey and on-site verification sampling targets were met for all the measures that were evaluated.

[3] The sampling for this evaluation was done by measure type and IOU with the exception of LED outdoor fixtures and streetlights. These two measures were sampled at the statewide level. For streetlights, 98% of the total statewide claimed savings were represented in PG&E. For LED outdoor fixtures, 73% of the total statewide claimed savings were represented in PG&E and 20% were represented in SDG&E.

TABLE 1-2: DATA COLLECTION SAMPLING TARGETS AND ACHIEVED DATA COLLECTION

IOU	ESPI Measure	Phone Survey		On-Site Verification	
		Target Number of Surveys	Achieved Surveys	Target Number of Onsites	Achieved Onsites
PGE	Indoor LED	87	135	70	73
	Delamping	50	51	-	-
SCE	Indoor LED	88	135	70	86
	Delamping	50	51	-	-
	Occupancy Sensors	30	39	-	-
SDGE	Indoor LED	88	105	70	74
	Occupancy Sensors	30	31	-	-
Statewide	LED Outdoor Fixtures	30	38	20	25
Statewide	LED Streetlights	25	27		

1.4 RESULTS

The results of this evaluation are provided in the tables below. Shown for each measure are the ex post (evaluation) and ex ante (claimed) net lifecycle savings values (MW or MWh), the realization rates (ratio of ex post to ex ante), and the corresponding NTGR. Results are shown by IOU and by measure. Note that the LED outdoor fixture and streetlight measures were evaluated only at the overall statewide level, and not by IOU.

TABLE 1-3: EX ANTE AND EX POST NET LIFECYCLE MWH SAVINGS, REALIZATION RATES AND NTGRS

IOU	ESPI Measure	Lifecycle Net MWh Savings			
		Ex Ante (Claimed)	Ex Post (Evaluated)	Net Realization Rate (Ex Post/Ex Ante)	Net-to-Gross Ratio
PGE	Indoor LED	175,055	200,881	115%	0.55
	Delamping	27,416	28,503	104%	0.63
SCE	Indoor LED	297,928	380,633	128%	0.63
	Delamping	12,755	14,632	115%	0.69
	Occupancy Sensors	4,548	3,404	75%	0.51
SDGE	Indoor LED	89,822	120,803	134%	0.67
	Occupancy Sensors	1,079	1,083	100%	0.69
Statewide	LED Outdoor Fixtures	99,968	85,961	86%	0.45
Statewide	LED Streetlights	82,558	72,505	88%	0.53

TABLE 1-4: EX ANTE AND EX POST NET LIFECYCLE MW SAVINGS, REALIZATION RATES AND NTGRS

IOU	ESPI Measure	Lifecycle Net MW Savings			
		Ex Ante (Claimed)	Ex Post (Evaluated)	Net Realization Rate (Ex Post/Ex Ante)	Net-to-Gross Ratio
PGE	Indoor LED	35.6	42.4	119%	0.55
	Delamping	6.4	6.7	104%	0.63
SCE	Indoor LED	56.9	57.3	101%	0.63
	Delamping	3.2	3.6	114%	0.68
	Occupancy Sensors	1.0	0.7	74%	0.51
SDGE	Indoor LED	15.0	21.0	140%	0.68
	Occupancy Sensors	0.2	0.2	100%	0.69
Statewide	LED Outdoor Fixtures	0	0	-	-
Statewide	LED Streetlights	0	0	-	-

The realization rates, which essentially compare the ex post and ex ante savings values, vary significantly across each measure. Differences between the ex post and ex ante savings values are due to differences in the underlying parameters that comprise the energy and demand savings.

For LED Lamps, realization rates were greater than 100%, indicating the ex post savings are greater than the ex ante savings. These differences are primarily driven by the following:

- The evaluation estimated different hours of operation than assumed by the ex ante deemed savings values (Section 6).
- The evaluation estimated a different reduction in wattage from the baseline to the retrofit than assumed by the ex ante deemed savings values (Section 6).
- The evaluation estimated greater effective useful life (or the length of time, in years, that the LED is expected to last) than assumed by the ex ante deemed savings values. This is true of all three LED measures with the exception of SCE A-lamps (Section 6).
- For PGE, the ex post NTGRs were less than the ex ante claim, but the ex post gross savings were significant enough to still maintain a high net realization rate. For SCE and SDG&E, the ex post NTGRs were all greater than the ex ante claim which resulted in an even higher net realization rate (Section 7 and 8).

For LED Outdoor Fixtures and Streetlighting, realization rates were less than 100%, indicating the ex post savings are less than the ex ante savings. This was primarily driven by the following:

- The evaluation estimated a lower NTGR than assumed by the ex ante deemed savings values (Section 7).
- However, the evaluation did estimate a greater reduction in wattage than assumed by the ex ante deemed savings values (Section 8).

For delamping, the evaluation estimated a larger NTGR than assumed by the ex ante deemed savings values, resulting in realization rates greater than 100% (Section 7). Conversely, for occupancy sensors in SCE, the evaluation estimated a smaller NTGR than assumed by the ex ante deemed savings values, resulting in realization rates less than 100% (Section 7).

1.5 RECOMMENDATIONS

Section 9 of the report provides conclusions and recommendations based on the ex post evaluation of these nonresidential deemed lighting measures. The recommendations typically focus on suggestions for how future research can address the uncertainty surrounding several of the impact parameters like wattages and operating hour values. These recommendations are supported by specific findings which are summarized along with each recommendation. In addition, the report section that contains each finding is documented along with that summary.

Below is a high level summary of those recommendations:

- While the municipal streetlight market is shifting toward LED technologies, high pressure sodium (HPS) and low pressure sodium (LPS) lamps continue to be the most commonly installed streetlight technology. The current ex ante assumption which uses HPS as the baseline should be continue to be used. As discussed in more detail in Section 4.2, all 27 city managers that were interviewed for the streetlight measure self-reported that the equipment that was removed and replaced with LED technologies was either HPS or LPS. They also mentioned that it was standard practice and/or policy to replace lamps as they burned out with the same technology type.
- Future evaluation efforts should consider conducting a large scale logger study for technologies like LED downlights and reflector lamps installed in high usage areas. The annual operation of these technologies can have potentially significant impacts on realized energy and demand savings moving forward. As discussed in Section 5.2 and Section 6, this evaluation found that operating hours for LED downlight measures, in particular, were dramatically different than ex ante claims. Downlight kits were generally installed in high usage areas like lobbies and hallways that can operate at or near to 24 hours a day, seven days a week.
- Future evaluation efforts should also continue to track and verify (where possible) the replaced wattage of all LED measure installations. As discussed in Section 5.3.1, the average replaced wattages for screw-in LED A-Lamps continue to decrease relative to prior evaluations. This

decrease was due primarily to an increased percentage of lower wattage CFLs that were being replaced. However, reflector lamps and downlighting, were found to be typically replacing less efficient incandescent and halogen lamps. Therefore, it is important to see if there is a trend of replaced lighting technologies becoming more efficient, which would result in lower realized energy savings.

1.6 CONTACT INFORMATION

The ED Project Manager for this study was Mr. Jeorge Tagnipes. Itron served as the Prime Contractor managing this study, led by Mr. Brian McAuley.

The following is Mr. Tagnipes and Mr. McAuley's contact information.

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2 INTRODUCTION AND OVERVIEW OF STUDY

This report documents the activities undertaken by the Nonresidential Deemed ESPI Lighting Impact Evaluation of the 2015 IOUs' energy efficiency programs.[4] The overall goal of this study is to perform an impact evaluation on specific nonresidential deemed lighting measures that were identified in the ESPI decision.[5]

This report is informed by Attachment 2 and 3 of the ESPI decision for program year (PY) 2015 and details the goals and objectives of the impact evaluation to meet those requirements. Likewise, the report will discuss the researchable issues, information on the measure groups and projects evaluated as well as the data sources used, the approach for sampling, the verification analysis and the methods used to determine ex post energy and demand impacts. Finally, the report will present the results and findings from the analysis that can then be used to update the NTGRs and gross/net first year and lifecycle savings for the measures detailed in the ESPI decision.

2.1 EVALUATION RESEARCH OBJECTIVES

The objective of this study is to perform a measure and/or measure-parameter impact evaluation, utilizing existing evaluation data and new primary evaluation data, in order to update existing gross and/or net savings estimates and inform future savings values for specific lighting measures identified in the ESPI decision. Attachment 2 of the ESPI decision provides an overview of the portfolio parameters that have been identified as potentially requiring ex post verification. The parameters associated with deemed measure verification include measure installation/verification, UES, NTGRs, gross and net energy savings values, EUL and impact load shapes.

While the verification of assumptions and uncertainty surrounding these parameters are not measure-specific, the final 2015 ESPI Uncertain List identifies a number of deemed nonresidential measures that are subject to some level of ex post evaluation for the 2015 program year. Below is a list of the lighting measures that were identified in that decision. Note that the parameters associated with these measures represent potential areas of focus and that the ex post evaluation is not limited in scope to any specific parameters. The evaluation team has determined, with guidance from the CPUC, which measures and

[4] This report focuses on the ESPI measures that were identified for the 2015 program cycle.

[5] D.13.09.023, Decision Adopting Efficiency Savings and Performance Incentive Mechanism. http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M076/K775/76775903.PDF http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/Shareholder+Incentive+Mechanism.htm

measure-parameters are subject to ex post evaluation. This determination is based on a number of factors, which will be detailed throughout this report:

- **Screw-in CFLs with wattage values greater than 30W** (PGE, SCE, SDGE)
  - Updates to gross baseline assumptions to account for the type and wattage of the lamp being replaced. Previous NTG studies have not focused on high wattage CFL lamps.
- **Screw-in LED lamps including downlight replacement kits** (PGE, SCE, SDGE)
  - Baseline assumptions regarding replaced lamp/fixtures for early retirement versus standard practice for normal replacement and ROB need to be updated as well as net savings.
- **Occupancy sensor lighting controls – integrated and wall/ceiling mount** (PGE, SCE, SDGE)
  - Code changes for this equipment may change standard practice.
- **Delamping of T12 lamps in existing fixtures** (PGE, SCE, SDGE)
  - Delamping may be a required action when surrounding fixtures are retrofitted. This may affect baseline assumptions.
- **LED street lights and outdoor area lighting** (PGE, SCE, SDGE)
  - Baseline assumptions regarding replaced lamp/fixtures for early retirement versus standard practice for normal replacement and ROB need to be updated as well as net savings.

A number of research objectives have been targeted in order to develop net and gross ex post impacts for the measures detailed above. This evaluation utilized a gross realization rate (GRR) approach, where site-specific gross ex post impacts were estimated from a sample of participants. These site-specific gross ex post impacts were then compared to the ex ante claim from the tracking data to develop a ratio of ex post to ex ante savings.

The following tasks have been performed, either by leveraging existing data from past evaluation efforts or collecting new primary data from participant phone surveys and on-site verification analyses, in order to develop the realization rates. A more detailed description of the impact methodologies follows in Section 4, given that the approach is site-specific and the objectives are predicated on the types of measures being evaluated.

- Confirm installations (verification). This includes on-site verification of measure installations that represent a significant percentage of ex ante claimed savings.
- Estimate baseline (both pre-retrofit and code based) and replacement (post-retrofit) equipment wattages, operating hours, and use shapes to support the estimate of gross ex post impacts and 8,760 impact load shapes.

- Estimate participant free-ridership to support the development of net-to-gross ratios and net savings values.
- Estimate remaining useful life values for selected measures, and update effective useful life estimates based on ex post operating hours.
- Estimate first year and lifetime gross and net ex post impacts (kWh, kW).
- Develop gross and net realization rates (GRRs and NRRs) that can be used to estimate population level estimates of ex post gross and net savings (both first year and lifecycle).

2.2 STUDIED MEASURE GROUPS

The measures listed on the ESPI Uncertain List for 2015 are aggregate measures that are comprised of roughly 20 unique deemed measure groups and well over 250 measure names[6]. The evaluation team mapped each of the measure names that were represented in the tracking data to these deemed ESPI measures. The evaluation team also referenced work papers for some measures where the measure name was too generalized, to more accurately map that measure to a proper ESPI category.

The ex post analysis for deemed lighting measures has been conducted at different levels of aggregation and not all ESPI measures have been targeted for the evaluation. Table 2-1 and Table 2-2 present each of the deemed lighting measure's contribution to each PA's 2015 portfolio lifecycle gross ex ante energy savings (as well as the statewide contribution) for kW and kWh. Also shown are each measure's lifecycle gross energy savings as a percentage of all ESPI lighting measure savings.

[6] Appendix F provides a detailed mapping of how each ESPI measure was mapped to a specific measure name found in the 2015 program tracking data.

TABLE 2-1: PERCENTAGE OF 2015 EX ANTE GROSS KW LIFECYCLE SAVINGS BY PORTFOLIO AND DEEMED ESPI LIGHTING

2015 ESPI Measure	Percent of Portfolio Lifecycle kW Savings				Percent of Lifecycle kW Savings among All Deemed ESPI Lighting Measures			
	SW	PGE	SCE	SDGE	SW	PGE	SCE	SDGE
CFL >30W	**0.00%**	0.00%			0.01%	0.03%		
Delamping	**0.48%**	0.74%	0.36%		8.12%	15.66%	5.11%	
LED Downlights	**1.11%**	0.99%	1.24%	1.42%	18.98%	20.89%	17.70%	19.22%
LED Lamps	**4.22%**	3.00%	5.33%	5.85%	71.98%	63.41%	75.79%	79.43%
LED Outdoor Fixtures	**0.00%**	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
LED Streetlights	**0.00%**	0.00%	0.00%		0.00%	0.00%	0.00%	
Occupancy Sensors	**0.05%**		0.10%	0.10%	0.91%		1.40%	1.35%
TOTAL	**5.86%**	**4.73%**	**7.03%**	**7.37%**				

TABLE 2-2: PERCENTAGE OF 2015 EX ANTE GROSS KWH LIFECYCLE SAVINGS BY PORTFOLIO AND DEEMED ESPI LIGHTING

2015 ESPI Measure	Percent of Portfolio Lifecycle kWh Savings				Percent of Lifecycle kWh Savings among All Deemed ESPI Lighting Measures			
	SW	PGE	SCE	SDGE	SW	PGE	SCE	SDGE
CFL >30W	**0.00%**	0.00%			0.01%	0.02%		
Delamping	**0.39%**	0.64%	0.25%		5.12%	7.82%	3.92%	
LED Downlights	**1.17%**	1.02%	1.23%	1.64%	15.51%	12.45%	18.90%	15.14%
LED Lamps	**4.22%**	2.94%	4.77%	7.26%	56.05%	36.06%	73.50%	66.97%
LED Outdoor Fixtures	**0.92%**	1.65%	0.13%	1.85%	12.18%	20.26%	1.93%	17.06%
LED Streetlights	**0.79%**	1.91%	0.03%		10.50%	23.37%	0.51%	
Occupancy Sensors	**0.05%**		0.08%	0.09%	0.63%		1.24%	0.83%
TOTAL	**7.52%**	**8.16%**	**6.49%**	**10.84%**				

As shown in Table 2-1 and Table 2-2, each of these deemed lighting measures that were identified in the ESPI decision contributes varying levels of ex ante lifecycle gross portfolio savings. Overall, they represent roughly 5.9% and 7.5% of total ex ante kW and kWh savings, respectively. LED lamps represent 72% and 56% of those totals. CFL, delamping and occupancy sensor measures make up a much less significant level

of ex ante lifecycle kW and kWh savings As a result, the evaluation team has applied different levels of rigor to each of the measures and measure-parameters, given the fact that some measures contribute a more significant percentage of overall savings compared to others. Section 3 and 4 detail what data has been collected and/or applied in more detail, but Table 2-3 below summarizes the level of rigor for each measure.

Also shown is if phone surveys were administered to estimate NTGRs and the analysis approach that was utilized to estimate gross savings. The gross realization rate (GRR) refers to the approach of estimating site specific savings values for a sample of participants, and developing a realization rate of savings (the ratio of aggregate ex post savings to aggregate ex ante savings for the sample) and applying the GRR to the ex ante savings value for the population to estimate ex post population level savings.

TABLE 2-3: LEVELS OF RIGOR AND DATA SOURCES FOR 2015 ESPI LIGHTING MEASURES

2015 ESPI Measure	Level of Rigor	Phone Surveys	Onsites	NTG	Gross
CFL >30W	None	No	No	Pass Through	Pass Through
Delamping	Low	Yes	No	Yes	Pass Through
LED Downlights	High	Yes	Yes	Yes	GRR
LED Lamps	High	Yes	Yes	Yes	GRR
LED Outdoor Fixtures	High	Yes	Yes	Yes	GRR
LED Streetlights	Low	Yes	No	Yes	Pass Through
Occupancy Sensors	Low	Yes	No	Yes	Pass Through

The demand and energy savings associated with each level of rigor (as a percentage of statewide ex ante ESPI lighting savings) is provided below along with a brief discussion of how these levels of rigor have been applied:

- **High Level of Rigor**
  - 91% and 84% of Deemed ESPI lighting kW and kWh
    - For LED downlights, lamps and outdoor lighting, new primary data has been collected utilizing a phone and on-site survey instrument – from which NTG ratios and GRRs have been developed. Site-specific ex post operating hours have been estimated based on adjusted self-reported operating schedules and business hour rates. Wattage data have been collected primarily from on-site data collection.
- **Low Level of Rigor**
  - 9% and 16% of Deemed ESPI lighting kW and kWh

- For streetlighting, lighting controls and delamping measures a phone survey has been conducted to develop NTGRs. The gross savings associated with these measures have received an ex ante pass through.

- **Do Nothing**
  - Less than 0.01% of Deemed ESPI lighting kW and kWh
    - No gross or net analysis has been conducted for CFL (>30 watts) given the extremely low contribution to overall savings. Gross and net savings have received an ex ante pass through.

2.3 OVERVIEW OF IMPACT EVALUATION APPROACH

The evaluation team utilized a gross realization rate (GRR) approach to develop gross and net ex post kW and kWh savings for the 2015 ESPI measures that were detailed above in Section 2.2 . For each of the deemed ESPI measures, site-specific gross ex post impacts were estimated from a sample of program participants. The evaluation team then compared those impacts to the ex ante claim for each site-measure to develop a ratio of ex post to ex ante gross savings. The evaluation team developed GRRs for specific participant segments and these rates were applied to the population of participants in order to develop program population estimates of ex post gross savings.

A net-to-gross (NTG) analysis was also performed using a self-report analysis based on participant phone survey data. The evaluation team developed NTG ratios for each participant segment in a manner consistent with the gross impact analysis. These NTGRs were applied back to the ex post gross impacts in order to estimate net savings for the population of program participants.

The general approach that the evaluation team utilized to estimate ex post gross impacts is based on developing hourly impacts to generate an impact load profile. From this profile, the impacts for each measure were aggregated to develop an annual ex post gross kWh savings estimate and – averaged over site-specific hours – to develop an ex post gross kW savings estimate. The evaluation team utilized the following general algorithm to estimate the gross ex post impacts:

$$Impact\_Hour\_i = MeasureQuantity \times \left[\begin{array}{l} (Baseline\_Wattage \times Percent\_On\_Pre\_Hour\_i) \\ -(Post\_Wattage \times Percent\_On\_Post\_Hour\_i) \end{array} \right]$$

Where:

MeasureQuantity = the quantity of measures found to be installed and operable during the on-site verification.

Baseline_Wattage = the wattage associated with the measure that was replaced or with a measure that corresponds to an industry standard practice or code baseline. Some measures are subject to a dual baseline approach over the life of the installed measure while others are based solely on industry standard practice or the replaced wattage.

Post_Wattage = the wattage associated with the measure case installation.

Percent_On_Pre_Hour = the percentage of time the baseline equipment is "ON" during a specific hour i. These estimates are based on adjusted self-reported operating hours and business hours gathered on site.

Percent_On_Post_Hour = the percentage of time the installed measure is "ON" during a specific hour i. These estimates are based on adjusted self-reported operating hours and business hours gathered on site.

One final parameter that the evaluation team utilized to estimate annual energy and demand impacts is the HVAC interactive effects. The Database for Energy Efficient Resources (DEER) provides a set of factors that were used to incorporate the kWh and kW HVAC interactive effects associated with the installed measures. The kWh factors are multiplied by the annual kWh impact for a given participant, and the kW factors are multiplied by the kW demand impact. Different factors are applied to a given measure and participant based on if the measure was a CFL or not, the participant's IOU, the climate zone where the participant is located, the building type of the participant, and if the participant's facility is new or existing. These interactive effects were adjusted further based on whether or not the specific activity area of measure installation was conditioned or not. For example, HVAC interactive effects were not calculated for a given measure within a specific activity area if the on-site surveyor confirmed that the area of installation was not conditioned.

For some measures evaluated under this study, baseline wattages were estimated differently for customers that replaced their equipment on burnout or as a result of a natural replacement, as opposed to those that were influenced by the program to make an early replacement. When a measure was considered an early replacement (ER), the evaluation team examined the lifecycle savings over two distinct time periods. The first time period is associated with the replaced equipment's remaining useful life (RUL), which is the period over which the accelerated program adoption was considered to have been made. The second or post-RUL period, continues from the end of the RUL through the measure's effective useful life (EUL). Different baseline wattages are used for each period.

The remainder of this report will include the following:

- Section 3 discusses the data sources that were utilized to estimate each of the individual measure parameters, the sample design, and resulting data used in the evaluation.
- Section 4 discusses the overall gross impact methodology and how first year and lifecycle ex post savings were developed for each lighting measure.
- Section 5 discusses the development of each of the gross impact parameters – installation rates, pre-and post-retrofit wattages, operating hours and effective useful life (EUL).
- Section 6 discusses the sample level gross realization rates and the ex ante to ex post parameter comparisons.
- Section 7 discusses the results of the phone interviews and the net-to-gross (NTG) analysis.
- Section 8 presents the final study results including a discussion of the gross and net realization rates and the total population level ex post energy and demand savings.
- Section 9 presents the conclusions and recommendations.
- Appendix A presents the participant telephone survey instrument.
- Appendix B presents the on-site survey instrument.
- Appendix C presents the method used to adjust the self-reported operating schedules.
- Appendix D presents the ER/ROB algorithm that was used to determine early replacement.
- Appendix E presents the phone survey banners.
- Appendix F presents the ESPI measure mapping from measure name in the tracking data.
- Appendix AA presents the standardized high level savings for both gross and net first year and lifecycle.
- Appendix AB presents the standardized per unit savings for both gross and net first year and lifecycle.
- Appendix AC presents the summary of recommendations for the Response to Recommendations (RTR).

3 DATA SOURCES, SAMPLE DESIGN AND DATA COLLECTION

3.1 DATA SOURCES

The evaluation team utilized a variety of data sources to support the development of the site-specific estimates of gross and net ex post savings.

3.1.1 On-Site Audits

The evaluation team conducted on-site audits for all deemed LED measures (with the exception of streetlight measures). The purpose of these audits was to collect site-specific information that could be used to support the parameter estimates that are used in the impact algorithm. On-site surveyors verified that measures that were rebated were installed and operable. In the event that rebated quantities were not consistent with the quantities found on site, the surveyors also quantified and detailed the reason for that inconsistency – the number of rebated measures that had been removed, had burned out or had been placed in storage.

Surveyors also collected equipment manufacturer and model numbers so that the evaluation team could perform equipment lookups. These lookups provided information regarding the wattage and lumen output of the installed equipment to support the development of post-retrofit wattages. These lookups also provided information on manufacturer lamp/fixture life in order to update the effective useful life (EUL) of the measure. Surveyors also attempted to collect information on the baseline equipment that had been replaced. They investigated non-rebated areas and/or storage areas to determine the wattage of the pre-existing equipment. Finally, self-report data were collected on lighting equipment usage schedules and business hours to aid in the development of pre- and post-retrofit load shapes.

3.1.2 Participant Phone Survey

The evaluation team also conducted phone surveys to recruit customers for on-site verification as well as to collect data for the net-to-gross (NTG) analysis. While the evaluation team only conducted on-site verification work for deemed LED measures, phone interviews were conducted for all evaluated measures including streetlighting, delamping and occupancy sensor measures. Computer assisted telephone interviews (CATI) were the predominant phone interview methodology, however, for all LED outdoor streetlight measures, the evaluation team conducted in-depth professional interviews with program participants. The evaluation team also asked a series of questions to help identify whether or not measure installations were early replacement (ER) or replacement on burnout (ROB). The decision-maker was

asked several questions regarding the age and condition of the pre-existing equipment during the phone interview. These data were also corroborated during the on-site verification.

3.2 ON-SITE AND PHONE SURVEY SAMPLE DESIGN

3.2.1 LED Lighting

As presented in Table 2-2, LED measures represent 7.1% of statewide lifecycle portfolio energy savings and 94.2% of the statewide kWh savings representing all of the deemed ESPI lighting measures. This measure category, however, represents several different technology types and applications. Indoor LED lamps, for example, include the A-lamp type, reflector lamp types (BR, MR-16 and PAR) and specialty bulbs like candelabras and accent globes. LED downlights are unique from the other LED lamp measures in that they include not only a lamp replacement, but a fixture/housing replacement as well. Similarly, for exterior LED fixtures, the applications are very different for city streetlights versus parking lots/structures and other general outdoor lighting. As such, the evaluation team developed the sample design for LED measures to take into account these different technology groupings and applications.

Table 3-1 presents both the on-site and phone survey sample design for the indoor LED measures along with the number of nonresidential downstream and midstream participants, the percentage of lifecycle demand and energy savings for 2015 (by PA), sample targets and the precision objectives. Given the heterogeneity of technologies and the varying distribution of portfolio lifecycle savings, the indoor LED ESPI measure has been grouped into four measure categories: 1) A-lamps, 2) all reflector lamp types, 3) downlights and 4) specialty lamps.

Given the fact that indoor LED lamps are ESPI measures for each of PG&E, SCE and SDG&E, the sample design was stratified by PA and technology type. For PG&E, reflector lamp measures represent more significant lifecycle kWh savings (44%) than A-Lamps and downlight measures (27% and 25%, respectively). The on-site sample quota was set at 25 for both lamp measures and 20 for downlights. For SCE and SDG&E, A-lamps represent a much more significant percentage of lifecycle energy savings than reflector lamps or downlights, so the on-site sample quotas for A-lamps were set to 30 (compared to 20 for the other two segments). Given the much less significant level of savings associated with specialty lamps for all three PAs, these measures were not evaluated on an ex post basis and their gross savings are tantamount to a pass through.

Because the NTGR survey was administered as part of the recruitment process and recruitment was less than 100%, the evaluation team conducted more NTG phone surveys than on-site completes. When the research plan was being developed, the evaluation team expected to complete 25% more phone surveys (on average) in order to reach those on-site targets.

TABLE 3-1: 2015 INDOOR LED PHONE SURVEY AND ON-SITE SAMPLE DESIGN

PA	LED Type	Sites	% Lifecycle Gross Savings		On-Site Sample Design		Phone Survey Sample Design	
		N	MW	MWh	n	90% CI	n	90% CI
PGE	A-Lamp	1,987	27%	27%	25	90/25-30	31	90/10
	Downlight	794	25%	26%	20	90/30	25	90/10
	Reflector Lamp	3,098	45%	44%	25	90/25-30	31	90/10
	Specialty Lamp	539	3%	3%	-	-	-	-
	All	**6,418**	**100%**	**100%**	**70**	**90/15**	**87**	**90/5**
SCE	A-Lamp	8,971	53%	53%	30	90/25-30	38	90/10
	Downlight	2,990	19%	20%	20	90/30	25	90/10
	Reflector Lamp	4,660	23%	21%	20	90/30	25	90/10
	Specialty Lamp	744	5%	5%	-	-	-	-
	All	**17,365**	**100%**	**100%**	**70**	**90/15**	**88**	**90/5**
SDGE	A-Lamp	1,945	46%	49%	30	90/25-30	38	90/10
	Downlight	545	19%	18%	20	90/30	25	90/10
	Reflector Lamp	1,331	31%	28%	20	90/30	25	90/10
	Specialty Lamp	352	4%	4%	-	-	-	-
	All	**4,173**	**100%**	**100%**	**70**	**90/15**	**88**	**90/5**

Outdoor LED fixtures represent a variety of different exterior applications. These include general outdoor area lighting and more specific applications like street lighting, wall and pole mount fixtures (not specified as street lighting) and parking garages. As presented in Table 2-2 deemed outdoor LED streetlight measures are represented in PG&E and SCE, while other outdoor fixtures are represented in all three PAs. For the street lighting measure, the 312 sites actually represent 42 unique site contacts, which represent cities and other municipalities that underwent extensive retrofits. Given the low number of unique contacts participating within the frame, the evaluation team issued a data request to PG&E and SCE to garner more specific customer contact information than is available in the Customer Information System (CIS) and tracking data, along with account representative information (where available).

Non-streetlight outdoor LED measures are represented in all three PAs, but as evidenced in Table 3-2 the savings are only significant for PG&E and SDG&E. A random sample of outdoor LED fixture measures was drawn across PAs which took into account the larger distribution of sites and savings in PG&E relative to the other PAs. The evaluation team set the on-site sample size to 20 for these measures. Again, the phone survey quota was set higher (30) than on-site surveys given the fact that recruitment is generally less than 100%. As noted above, in depth interviews (IDI) were performed with municipal/city managers for the LED streetlight measure. Given the fact that the 312 represent only 42 unique contacts, the evaluation team set the phone survey quota for this measure to 25.

TABLE 3-2: 2015 OUTDOOR LED PHONE SURVEY AND ON-SITE SAMPLE DESIGN

PA	LED Type	Sites	% Lifecycle Gross Savings		On-Site Sample Design		Phone Survey Sample Design	
		N	MW	MWh	n	90% CI	n	90% CI
PGE	Outdoor Fixture	1,154	0%	73%	-		-	
	Street Light	235	0%	98%	-		-	
SCE	Outdoor Fixture	42	0%	7%	-		-	
	Street Light	77	0%	2%	-		-	
SDGE	Outdoor Fixture	564	0%	20%	-		-	
All	**Street Light**	**312**	**0%**	**100%**	**0**		**25**	**90/10**
	Outdoor Fixture	**1760**	**0%**	**100%**	**20**	**90/30**	**30**	**90/10**

3.2.2 Delamping

As presented in Table 2-2, delamping measures represent 0.4% of statewide lifecycle portfolio energy savings and 5.0% of the statewide kWh savings representing all of the ESPI lighting measures. These savings include only those delamping measures where T12 linear fluorescent fixtures represent the baseline technology in the ex ante claim. These measures were only rebated in PG&E and SCE and represent a number of baseline to retrofit linear configurations. Given the less than significant savings representation for the delamping measure, the evaluation team has applied a low level of rigor to the evaluation of the measure. No new on-site verification was planned or conducted for this measure, however phone surveys were conducted.

Table 3-3 presents the phone survey sample design for the T12 delamping measures along with the number of nonresidential downstream participants, lifecycle demand and energy savings for 2015 (by PA), sample targets and the precision objectives. The phone survey quotas were set to 50 for PG&E and 30 for SCE.

TABLE 3-3: 2015 INDOOR DELAMPING PHONE SURVEY AND ON-SITE SAMPLE DESIGN

PA	Measure Type	Sites	Lifecycle Gross Savings		On-Site Sample Design		Phone Survey Sample Design	
		N	MW	MWh	n	90% CI	n	90% CI
PGE	Delamp	675	10,539	44,939,717	-		50	90/10
SCE	Delamp	621	5,255	21,258,897	-		30	90/10

3.2.3 Occupancy Sensors

As presented in Table 2-2, occupancy sensor measures represent 0.05% of statewide lifecycle portfolio energy savings and 0.6% of the statewide kWh savings representing all of the deemed ESPI lighting measures. These measures were only rebated in SCE and SDG&E and represent wall/ceiling mounted controls along with fixture integrated controls. Given the less than significant savings representation for the occupancy sensor measures, the evaluation team has applied a low level of rigor to the evaluation of these measures. No new on-site verification was planned or conducted for this measure, however phone surveys were conducted.

Table 3-4 presents the phone survey sample design for the occupancy measures along with the number of nonresidential downstream participants, lifecycle demand and energy savings for 2015 (by PA), sample targets and the precision objectives. The phone survey quotas were set to 30 apiece for SCE and SDG&E.

TABLE 3-4: 2015 INDOOR OCCUPANCY SENSOR PHONE SURVEY AND ON-SITE SAMPLE DESIGN

PA	Measure Type	Sites	Lifecycle Gross Savings		On-Site Sample Design		Phone Survey Sample Design	
		N	MW	MWh	n	90% CI	n	90% CI
SCE	Controls	2,921	1,442	6,715,095	-		30	90/10
SDGE	Controls	819	353	1,563,728	-		30	90/10

3.3 ACHIEVED ON-SITE AND PHONE SURVEY DATA COLLECTION

This section of the report presents the phone survey and on-site sample design along with the achieved total sample design and number of site-measures that were ultimately evaluated. The evaluation team developed sampling quotas in order to increase the statistical precision of the population level ex post net and gross realization rates.

3.3.1 LED Lighting

Table 3-5 presents the achieved data collection for indoor LED lighting. The evaluation team had initially set the overall phone survey quotas to 88 in both SDG&E and SCE and 87 in PG&E. As the phone survey was used as a recruitment tool for the on-site verification (as well as to develop estimates of program free-ridership and NTG ratios), these quotas were set higher than the on-site quotas. Overall, the evaluation team completed 375 phone interviews across the three PAs – 135 in PG&E, 135 in SCE and 105 in SDG&E. Also presented are the percentages of population level ex ante lifecycle kWh savings that were represented in the phone survey sample completes. For the NTG analysis, the evaluation team sampled

3.4%, 0.6% and 1.4% of total ex ante lifecycle kWh savings for each indoor LED measure category in PG&E, SCE and SDG&E, respectively.

Also presented are the on-site quotas, achieved on-site quotas and the total number of unique site-measures that were evaluated for the gross impact analysis. All nine on-site sample quotas were reached. The total evaluated data collection numbers are higher that the achieved data collection because program participants often install more than one type of lighting technology[7]. For example, a customer could have been pulled as an A-Lamp participant in PG&E, but that customer could have also installed a reflector lamp or downlight measure through the program. Overall, 346 unique site-strata were evaluated across all 3 PAs which represents roughly 2.8%, 0.7% and 2.6% of ex ante population level kWh savings for PG&E, SCE and SDG&E, respectively.

TABLE 3-5: 2015 INDOOR LED PHONE SURVEY AND ON-SITE ACHIEVED DATA COLLECTION

PA	LED Type	Phone Survey			On-site Verification			
		Quota	Achieved	% LC Gross Savings	Quota	Achieved	Total Evaluated	% LC Gross Savings
PGE	A-Lamp	31	47	1.6%	25	26	45	3.3%
	Downlight	25	40	8.7%	20	22	21	5.7%
	Reflector Lamp	31	48	1.4%	25	25	33	0.9%
	All	**87**	**135**	**3.4%**	**70**	**73**	**99**	**2.8%**
SCE	A-Lamp	38	55	0.5%	30	30	72	0.7%
	Downlight	25	40	0.9%	20	30	30	0.7%
	Reflector Lamp	25	40	0.6%	20	26	32	0.5%
	All	**88**	**135**	**0.6%**	**70**	**86**	**134**	**0.7%**
SDGE	A-Lamp	38	45	0.6%	30	30	58	3.1%
	Downlight	25	30	3.4%	20	24	24	1.9%
	Reflector Lamp	25	30	1.4%	20	20	31	2.1%
	All	**88**	**105**	**1.4%**	**70**	**74**	**113**	**2.6%**

Table 3-6 presents the achieved data collection for LED outdoor fixtures and streetlighting. For both these measures the evaluation team was successful in reaching the phone survey quotas. The evaluation team conducted 27 phone interviews with streetlighting participants which represented roughly 85% of the

[7] This is true for all segments except the PGE downlight segment. The evaluation team pulled one PGE site as a downlight, but the surveyor could not confirm or deny that the measures had been installed. The measure was dropped from the analysis, but the participant had installed other LED measures which were included in the analysis.

total statewide ex ante lifecycle kWh savings for the measure. 38 phone interviews were conducted and completed for LED outdoor fixtures, compared to the phone survey quota of 30.

No on-site data collection was planned or conducted for LED streetlighting. For outdoor fixture measures, however, the quota of 20 on-site visits was met. The total number of unique site-strata that were evaluated was 25.

TABLE 3-6: 2015 OUTDOOR LED PHONE SURVEY AND ON-SITE ACHIEVED DATA COLLECTION

PA	LED Type	Phone Survey			On-site Verification			
		Quota	Achieved	% LC Gross Savings	Quota	Achieved	Total Evaluated	% LC Gross Savings
All	Streetlight	25	27	84.6%	-	-	-	-
	Outdoor Fixture	30	38	1.2%	20	20	25	0.6%

3.3.2 Delamping

Table 3-7 presents the data collection summaries for linear delamping. The evaluation team only conducted phone interviews for this measure (no on-site verification was planned or conducted). The evaluation team exceeded the phone survey quotas for both PG&E and SCE with a total of 83 phone interviews being representing in the NTG analysis (51 in PG&E and 32 in SCE).

TABLE 3-7: 2015 INDOOR DELAMPING PHONE SURVEY AND ON-SITE ACHIEVED DATA COLLECTION

PA	Measure Type	Phone Survey			On-site Verification			
		Quota	Achieved	% LC Gross Savings	Quota	Achieved	Total Evaluated	% LC Gross Savings
PGE	Delamping	50	51	6.3%	-	-	-	-
SCE	Delamping	30	32	6.4%	-	-	-	-

3.3.3 Occupancy Sensors

The sample design of occupancy sensor measures is identical to that of delamping except that these were rebated in SCE and SDG&E only. Overall, the evaluation team exceeded the phone survey quotas for these measures; 39 interviews were completed with SCE participants and 31 with SDG&E participants.

TABLE 3-8: 2015 INDOOR OCCUPANCY SENSOR PHONE SURVEY AND ON-SITE ACHIEVED DATA COLLECTION

PA	Measure Type	Phone Survey			On-site Verification			
		Quota	Achieved	% LC Gross Savings	Quota	Achieved	Total Evaluated	% LC Gross Savings
SCE	Controls	30	39	2.3%	-	-	-	-
SDGE	Controls	30	31	13.7%	-	-	-	-

3.4 DATA COLLECTION

3.4.1 New and Existing On-Site Data Used to Support Pre- and Post-Retrofit Wattages

As part of the on-site verification, the evaluation team collected detailed information regarding the rebated measures found onsite. This information included a full inventory of the fixture/lamp type, the nominal lamp wattage, ballast information and fixture configurations. The evaluation team also collected lamp/fixture manufacturer and model numbers and performed lookups – based on measure specification sheets – in order to develop post-retrofit input fixture/lamp wattages. The lookups also served another important purpose. Specification sheets generally provide information regarding the manufacturer rated fixture/lamp life. The evaluation team combined these data with site-specific ex post operating hours to estimate measure level EULs (The EUL analysis is discussed in more detail in Section 5.4).

Table 3-9 to Table 3-12 present the data collection summaries from the 2015 on-site verification work that was conducted by the evaluation team. Each of the lamp/fixture observations is binned into wattage ranges (e.g. 4-9W, 10-15 W and >15W). Also provided are the number of unique measure make and model lookups that were performed for each rebated measure along with the number of measures where baseline equipment was physically found onsite. In the event that baseline equipment was not found onsite, the evaluation team employed a wattage reduction ratio (WRR) approach to estimate baseline wattages for the rebated measures that were evaluated (These data are discussed in more detail in Section 5.3).

TABLE 3-9: PGE INDOOR LED POST-RETROFIT MODEL LOOKUPS AND PRE-RETROFIT OBSERVATIONS

LED Type	Wattage Range	Unique Measures	Make Model Lookups	Baseline Equipment Onsite
A-Lamp	4-9W	36	33	0
	10-15W	12	12	1
	>15W	5	5	1
	All	**53**	**50**	**2**
Downlighting	4-9W	2	2	2
	10-15W	22	22	11
	>15W	3	3	1
	All	**27**	**27**	**14**
Reflectors	4-9W	23	12	0
	10-15W	22	21	4
	>15W	9	9	1
	All	**54**	**42**	**5**

TABLE 3-10: SCE INDOOR LED POST-RETROFIT MODEL LOOKUPS AND PRE-RETROFIT OBSERVATIONS

LED Type	Wattage Range	Unique Measures	Make Model Lookups	Baseline Equipment Onsite
A-Lamp	4-9W	16	15	7
	10-15W	56	56	14
	>15W	1	1	1
	All	**73**	**72**	**22**
Downlighting	4-9W	0	0	0
	10-15W	29	28	11
	>15W	1	1	1
	All	**30**	**29**	**12**
Reflectors	4-9W	16	12	4
	10-15W	19	19	6
	>15W	9	9	1
	All	**44**	**40**	**11**

TABLE 3-11: SDGE INDOOR LED POST-RETROFIT MODEL LOOKUPS AND PRE-RETROFIT OBSERVATIONS

LED Type	Wattage Range	Unique Measures	Make Model Lookups	Baseline Equipment Onsite
A-Lamp	4-9W	28	25	1
	10-15W	35	34	4
	>15W	1	1	0
	All	**64**	**60**	**5**
Downlighting	4-9W	1	1	0
	10-15W	20	16	5
	>15W	6	6	0
	All	**27**	**23**	**5**
Reflectors	4-9W	30	27	4
	10-15W	17	16	2
	>15W	3	2	2
	All	**50**	**45**	**8**

TABLE 3-12: STATEWIDE OUTDOOR LED POST-RETROFIT MODEL LOOKUPS AND PRE-RETROFIT OBSERVATIONS

LED Type	Wattage Range	Unique Measures	Make Model Lookups	Baseline Equipment Onsite
Outdoor Fixture	<50W	11	6	-
	50-100W	11	1	-
	101-150W	9	4	-
	>150W	1	0	-
	All	**32**	**11**	**-**

Given that baseline equipment was not found for any of the evaluated outdoor LED technologies and that this measure was not evaluated in the 2013-2014 program years, the evaluation team relied on customer self-reported baseline wattages. Site contacts were generally able to recollect the type of baseline equipment that had previously been installed along with the wattage of the replaced equipment. The most common baseline technologies were 208 to 456 watt metal halides and 85 watt incandescents.

3.4.2 Existing On-Site Data Used to Support Pre- and Post-Retrofit Operating Hours

The evaluation team utilized logger data that were collected throughout the 2010-12 and 2013-14 evaluation periods to develop ex post operating hour estimates for indoor LED measures. Those evaluations involved the installation of monitoring equipment on rebated LED measures in a variety of building and area types. These logger data were collected and compared against the self-reported

operating schedules that were garnered from the on-site contact as well as against the business hours of the business/facility. The evaluation team analyzed the logger data, self-reported schedules and business hours in a number of ways:

- Actual hourly logger data were compared to hourly self-reported operating schedules during the open hours of the business/facility by day type (weekend vs. weekday).
- Actual hourly logger data was analyzed for each business hour during the week and summarized by business period:
  - Open period: All hours of the day for which the business is open.
  - Opening and Closing Shoulders: The two hour before opening and two hours after closing.
  - Closed Period: All hour for which the business was closed and not in one of the shoulder periods.
- The self-reported comparisons and business hour analysis were also done at the control level – measures controlled by a switch versus measures controlled by an occupancy sensor.

Section 5.2 discusses the methodology in more detail and also explains how the evaluation team tested the approach. Table 3-13 below presents the number of sites and loggers that were used in this adjustment factor and business hour rate development analysis. Overall, measures installed on a switch represent the most significant logger data that were used in the analysis – 681 loggers representing 285 sites. 110 loggers monitoring measures that are on a control were installed at 68 sites. Across all building types, controls were more prevalent in restrooms while the distribution of loggers on switches is predicated on the building type and activity area of installation.

TABLE 3-13: 2010-2014 LOGGED DATA USED FOR ADJUSTMENT FACTORS AND BUSINESS HOUR RATES

Building Type	Activity Area	Occupancy Sensors		Switch	
		Total Sites	Total Loggers	Total Sites	Total Loggers
Assembly	Classroom			4	5
	Dining			5	7
	Hallway/Lobby			15	21
	Office			5	6
	Other Miscellaneous			12	21
	Religious Worship			9	12
	Restrooms	4	5	12	17
	Storage	1	2	11	13
	Total Assembly	**5**	**7**	**32**	**102**
Lodging	Commercial/Industrial Area			5	5
	Guest Rooms	5	15	23	93
	Hallway/Lobby			11	19
	Other Miscellaneous	3	4	15	23
	Restrooms			5	7
	Total Lodging	**7**	**19**	**39**	**147**
Office – Small	Conference Room			6	6
	Hallway/Lobby			27	32
	Kitchen/Break Room			6	6
	Office			18	21
	Other Miscellaneous	4	5	12	22
	Restrooms	17	18	23	29
	Storage			15	17
	Total Office - Small	**18**	**23**	**61**	**133**
Other	Other Miscellaneous	5	9	11	20
	Total Other	**5**	**9**	**11**	**20**
Restaurant	Dining			50	79
	Hallway/Lobby			16	17
	Kitchen/Break Room			11	11
	Other Miscellaneous	5	8	9	10
	Restrooms	7	9	22	25
	Storage			15	16
	Total Restaurant	**12**	**17**	**86**	**153**
Retail - Large	Other Miscellaneous	2	4	7	11
	Retail Sales			22	33
	Total Retail - Large	**2**	**4**	**24**	**44**
Retail - Small	Hallway/Lobby			5	5
	Kitchen/Break Room			5	5
	Office			6	6
	Other Miscellaneous	3	4	3	3
	Restrooms	21	23	15	16
	Retail Sales			44	79
	Storage			8	10
	Total Retail - Small	**22**	**27**	**65**	**124**
All Building Types		**68**	**110**	**285**	**681**

3.4.3 New On-site Data Used to Support Pre- and Post-Retrofit Operating Hours

As discussed above in Section 3.4.2 the evaluation team utilized existing lighting logger data, adjusted self-report data and business hours to develop pre- and post-retrofit hours of use for indoor LED measures. The self-report adjustment factors were developed at the building type, activity area and control level. Table 3-14 to Table 3-17 present the number of sites – by PA, building type and activity area – that the evaluation team analyzed in 2015 along with the number of fixtures that were installed and operable at the time of the on-site verification.

The activity area and schedule for each installation has a significant impact on the overall operating hours and coincidence demand factors. For example, an LED A-Lamp installed in a guest room of a hotel will generally have lower annual operating hours than an identical lamp installed in the hallway corridors and lobby of the same hotel. Hotel guests are not always in their room, and the room itself may not be occupied consistently throughout the year. Whereas, the hallway lighting is generally operating 24 hours a day regardless of occupancy. The same is true for a measure installed in a restroom compared to the retail sales area of a department store. Overall, the evaluation team verified indoor LED technologies in a variety of business types and activity areas across all three PAs.

TABLE 3-14: PGE BUILDING TYPE, ACTIVITY AREA AND FIXTURE COUNTS BY INDOOR LED TYPE

Building Type	Activity Area	LED A-Lamp		LED Reflector Lamp		LED Downlight	
		Total Sites	Total Fixtures	Total Sites	Total Fixtures	Total Sites	Total Fixtures
Agriculture	Other Miscellaneous	3	452				
	Storage	2	26				
	Total Agriculture	**3**	**478**				
Lodging	Guest Rooms	12	3,531	2	73	5	552
	Hallway/Lobby	4	307			7	1,275
	Office	2	34	2	13		
	Other Miscellaneous	3	41	2	10	2	177
	Outdoor			1	13	1	12
	Restrooms					2	924
	Total Lodging	**14**	**3,942**	**4**	**109**	**8**	**2,940**

TABLE 3-14 (CONT'D): PGE BUILDING TYPE, ACTIVITY AREA AND FIXTURE COUNTS BY INDOOR LED TYPE

Building Type	Activity Area	LED A-Lamp		LED Reflector Lamp		LED Downlight	
		Total Sites	Total Fixtures	Total Sites	Total Fixtures	Total Sites	Total Fixtures
Office - Large	Hallway/Lobby					5	2,158
	Office					2	1,415
	Other Miscellaneous					2	264
	Total Office - Large					**6**	**3,837**
Office - Small	Hallway/Lobby					3	169
	Other Miscellaneous	2	11			1	20
	Restrooms	2	2				
	Total Office - Small	**3**	**13**			**3**	**189**
Other	Hallway/Lobby			2	143		
	Office					2	14
	Other Miscellaneous	6	452	3	113	2	8
	Outdoor	1	3	5	32		
	Total Other	**7**	**455**	**8**	**288**	**4**	**22**
Other Industrial	Other Miscellaneous	3	22				
	Total Other Industrial	**3**	**22**				
Restaurant	Dining			4	266		
	Hallway/Lobby	2	8				
	Kitchen/Break Room	2	31				
	Other Miscellaneous			1	18		
	Outdoor			1	2		
	Restrooms	2	24				
	Total Restaurant	**3**	**63**	**4**	**286**		
Retail - Small	Hallway/Lobby	3	7				
	Other Miscellaneous	5	91	5	33		
	Outdoor	1	3	3	28		
	Restrooms	5	10				
	Services			2	21		
	Retail Sales	5	45	11	373		
	Total Retail - Small	**12**	**156**	**17**	**455**		

TABLE 3-15: SCE BUILDING TYPE, ACTIVITY AREA AND FIXTURE COUNTS BY INDOOR LED TYPE

Building Type	Activity Area	LED A-Lamp		LED Reflector Lamp		LED Downlight	
		Total Sites	Total Fixtures	Total Sites	Total Fixtures	Total Sites	Total Fixtures
Assembly	Conference Room	2	29				
	Dining	4	51			2	14
	Hallway/Lobby	3	9	2	14	2	72
	Office			2	15		
	Other Miscellaneous	5	57	5	84	4	113
	Outdoor	3	16			2	63
	Religious Worship	7	156	3	131	5	237
	Restrooms	2	8				
	Storage	4	35				
	Total Assembly	**11**	**363**	**6**	**244**	**7**	**499**
Health - Nursing	Hallway/Lobby	4	627				
	Other Miscellaneous	1	63				
	Restrooms	2	63				
	Total Health - Nursing	**4**	**753**				
Lodging	Dining	2	36				
	Guest Rooms	3	815				
	Hallway/Lobby	4	504			4	142
	Office					2	34
	Other Miscellaneous	1	33			2	127
	Outdoor	1	10				
	Restrooms	2	34				
	Total Lodging	**5**	**1,432**			**4**	**303**
Office - Small	Hallway/Lobby	3	20	2	27		
	Office	3	17	4	36		
	Other Miscellaneous	3	9	3	9		
	Outdoor			1	3		
	Restrooms	9	18				
	Storage	3	4				
	Total Office - Small	**11**	**68**	**8**	**75**		
Other	Other Miscellaneous	4	389	4	199	3	117
	Outdoor	1	3	3	10		
	Restrooms	2	7				
	Total Other	**5**	**399**	**5**	**209**	**3**	**117**
Other Industrial	Commercial Space	2	8				
	Storage	2	3				
	Total – Other Industrial	**4**	**15**				

TABLE 3-15 (CONT'D): SCE BUILDING TYPE, ACTIVITY AREA AND FIXTURE COUNTS BY INDOOR LED TYPE

Building Type	Activity Area	LED A-Lamp		LED Reflector Lamp		LED Downlight	
		Total Sites	Total Fixtures	Total Sites	Total Fixtures	Total Sites	Total Fixtures
Restaurant	Dining	7	104			9	238
	Hallway/Lobby	6	16			6	32
	Kitchen/Break Room	4	16			2	8
	Other Miscellaneous					1	2
	Outdoor	3	8			1	11
	Restrooms	6	13			2	8
	Storage	5	13				
	Total Restaurant	**12**	**171**			**9**	**300**
Retail - Small	Hallway/Lobby	5	6	2	7		
	Office			2	15		
	Other Miscellaneous	3	6	4	13	1	15
	Outdoor	4	17	1	4		
	Restrooms	14	28			2	4
	Retail Sales	5	51	9	140	3	27
	Services	2	6			4	113
	Storage	6	13	2	3		
	Total Retail - Small	**20**	**127**	**13**	**182**	**7**	**159**

TABLE 3-16: SDGE BUILDING TYPE, ACTIVITY AREA AND FIXTURE COUNTS BY INDOOR LED TYPE

Building Type	Activity Area	LED A-Lamp		LED Reflector Lamp		LED Downlight	
		Total Sites	Total Fixtures	Total Sites	Total Fixtures	Total Sites	Total Fixtures
Assembly	Hallway/Lobby	2	2			2	34
	Other Miscellaneous	1	8	1	99	1	11
	Outdoor	1					
	Religious Worship	4	65	2	6	2	64
	Restrooms	2	6			2	15
	Total Assembly	**6**	**81**	**3**	**105**	**4**	**124**
Lodging	Guest Rooms	5	1,706			3	261
	Hallway/Lobby	3	38			3	67
	Other Miscellaneous	4	131	1	1	3	122
	Outdoor	2	82	2	72		
	Restrooms	2	26				
	Total Lodging	**6**	**1,983**	**3**	**73**	**4**	**450**
Multi-Family	Other Miscellaneous					3	66
	Total Multi-Family					**3**	**66**
Office - Small	Hallway/Lobby	4	6	2	13	2	12
	Office			2	41		
	Other Miscellaneous	3	2	1	31	2	10
	Patient Rooms	2	4				
	Restrooms	6	12				
	Total Office - Small	**9**	**25**	**3**	**85**	**3**	**22**
Other	Other Miscellaneous	3	1,533	2	153	1	7
	Outdoor	2	26				
	Total Other	**4**	**1,559**	**2**	**153**	**1**	**7**
Restaurant	Dining	5	48	5	241	3	62
	Hallway/Lobby	3	11	3	18		
	Kitchen/Break Room	4	16	3	21		
	Office	2	5			2	4
	Other Miscellaneous	1	2	2	27	3	16
	Outdoor	1	3	1	22		
	Restrooms	4	17	3	8		
	Storage	6	9				
	Total Restaurant	**9**	**111**	**7**	**336**	**4**	**82**
Retail - Small	Hallway/Lobby	3	13	4	31		
	Other Miscellaneous	4	10	1	9	2	26
	Restrooms	20	43				
	Services	2	3				
	Retail Sales	4	54			3	38
	Storage	6	10				
	Total Retail - Small	**24**	**132**	**5**	**40**	**5**	**64**

TABLE 3-17: STATEWIDE BUILDING TYPE AND FIXTURE COUNTS FOR OUTDOOR FIXTURE

PA	Building Type	Total Sites	Total Fixtures
PGE	Other	9	120
	Other Industrial	3	57
	Retail - Small	3	22
	All PGE	**15**	**199**
SDGE	Assembly	3	26
	Other	7	106
	All SDGE	**10**	**132**

The operating hour analysis also took into account the control type of the post-retrofit equipment. The adjustment factors were developed differently for measures that were installed with an occupancy sensor compared to those that were installed on a switch. Table 3-18 to Table 3-21 present the total number of rebated measures and the control type associated with those measures. In general, the majority of indoor LED measures were on switches. This is true for each measure technology and PA. In PG&E, the evaluation team also found a number of LED A-lamp, reflector lamp and downlight measures controlled by an energy management system (EMS). Roughly a quarter of the LED A-lamps that were evaluated in SCE were controlled by wall or ceiling mount occupancy sensors (23 of 98). For outdoor LED measures, the majority of fixtures (20 of 32 unique measures evaluated) were controlled by timeclocks and 9 were controlled by photocells.

TABLE 3-18: PGE CONTROL TYPE FOR INDOOR LED MEASURES

PA	Control Type	LED A-Lamp	LED Downlight	LED Reflector Lamp
PGE	Continuous 24 Hour	1	2	
	EMS	8	11	7
	Wall/Ceiling Mount Control	1	1	
	Photocell			2
	Switch	45	15	41
	Timeclock	1	1	5
	All	**56**	**30**	**55**

TABLE 3-19: SCE CONTROL TYPE FOR INDOOR LED MEASURES

PA	Control Type	LED A-Lamp	LED Downlight	LED Reflector Lamp
SCE	Continuous 24 Hour	1	1	
	Dimmer Switch		1	
	Electric Panel	3	1	1
	Integrated Control	1		1
	Wall/Ceiling Mount Control	23	3	3
	Photocell	4		2
	Photocell/Timeclock	5	3	2
	Switch	59	28	37
	Timeclock	1	1	1
	Twist Timer	1		
	All	**98**	**38**	**47**

TABLE 3-20: SDGE CONTROL TYPE FOR INDOOR LED MEASURES

PA	Control Type	LED A-Lamp	LED Downlight	LED Reflector Lamp
SDGE	Continuous 24 Hour	1	1	
	Daylight Control	1		
	Dimmer Switch		2	
	Electric Panel		4	1
	Integrated Control	1		
	Wall/Ceiling Mount Control	6	1	2
	Photocell	1		1
	Switch	59	22	48
	Timeclock	3		3
	Twist timer	1		
	All	**73**	**30**	**55**

TABLE 3-21: STATEWIDE CONTROL TYPE FOR OUTDOOR LED MEASURES

PA	Control Type	Outdoor LED Fixtures
All	Photocell	9
	Switch	3
	Timeclock	20
	All	**32**

4 GROSS IMPACT METHODOLOGY

As discussed in Section 2.3 the general approach that the evaluation team utilized to estimate ex post gross impacts is based on developing hourly impacts to generate an impact load profile. From this profile, the impacts for each measure were aggregated to develop an annual ex post gross kWh savings estimate and averaged over a schedule of site-specific hours to develop an ex post gross kW savings estimate. The evaluation team utilized the following general algorithm to estimate the gross ex post impacts:

$$Impact\_Hour\_i = MeasureQuantity \times \begin{bmatrix} (Baseline\_Wattage \times Percent\_On\_Pre\_Hour\_i) \\ -(Post\_Wattage \times Percent\_On\_Post\_Hour\_i) \end{bmatrix}$$

Where:

MeasureQuantity = the quantity of measures found to be installed and operable during the on-site verification.

Baseline_Wattage = the wattage associated with the measure that was replaced or with a measure that corresponds to an industry standard practice or code baseline. Some measures are subject to a dual baseline approach over the life of the installed measure while others are based solely on industry standard practice or the replaced wattage.

Post_Wattage = the wattage associated with the measure case installation.

Percent_On_Pre_Hour = the percentage of time the baseline equipment is "ON" during a specific hour i. These estimates are based on adjusted self-reported operating hours and business hours gathered on site.

Percent_On_Post_Hour = the percentage of time the installed measure is "ON" during a specific hour i. These data are based adjusted self-reported operating hours and business hours gathered on site.

One final parameter utilized to estimate annual energy and demand impacts is the HVAC interactive effects. The Database for Energy Efficient Resources (DEER) provides a set of factors that were used to incorporate the kWh and kW HVAC interactive effects associated with the installed measures. The kWh factors are multiplied by the annual kWh impact for a given participant, and the kW factors are multiplied by the kW demand impact. Different factors are applied to a given measure and participant based on if the measure was a CFL or not, the participant's IOU, the climate zone where the participant is located, the building type of the participant, and if the participant's facility is new or existing. These interactive effects were adjusted further based on whether or not the specific activity area of measure installation was conditioned or not.

For many measures evaluated under this study, baseline wattages are estimated differently for customers that replaced their equipment on burnout or as a result of a natural replacement, as opposed to those that were influenced by the program to make an early replacement. When a measure is considered an early replacement (ER), the evaluation team examined the lifecycle savings over two distinct time periods. The first time period is associated with the replaced equipment's remaining useful life (RUL), which is the period over which the accelerated program adoption was considered to have been made. The second or post-RUL period, continues from the end of the RUL through the measure's effective useful life (EUL). Different baseline wattages are used for each period. This methodology is referred to as a dual baseline approach and is discussed in more detail in Section 5.5 .

4.1 INDOOR LED MEASURES

The evaluation team applied a single baseline methodology to develop impacts for indoor LED measures – including A-lamps, reflectors and downlight measures. This methodology, in effect, treats all measures as replacement on burnout (ROB). Below is a brief description of how the evaluation team developed first year and lifecycle impacts for these measures along with the section of the report where each of the parameter estimates are discussed in more detail.

First Year Impact

$$FirstYearImpact = MeasQty\ x\ PercentON\ x\ (Prewattage - PostWattage)$$

MeasQty = the quantity of rebated measures that were installed and operable on site. The installation rate analysis is presented Section 5.1 .

PercentON = the percentage of time the equipment is "ON" throughout the year for energy savings or the percentage of time the equipment is "ON" throughout the peak demand period for demand savings. For measures that were installed in conjunction with an occupancy sensor, the Percent "ON" actually represents the pre-retrofit schedule for the measure. For all other measures, Percent "ON" in the pre-case is identical to the Percent "ON" in the post-case. The operating hour analysis is presented in Section 5.2 .

PreWattage = the wattage associated with the replaced measure. These estimates were developed either from baseline equipment found on site or from retrofit equipment and a WRR multiplier. The wattage analysis is discussed in Section 5.3 .

PostWattage = the wattage associated with the installed measure. These estimates were developed using data collected on site and through make and model lookups. The wattage analysis is discussed in Section 5.3 .

Lifecycle Impact

$$Lifecycle\ Impact = FirstYearImpact\ x\ EUL$$

FirstYearImpact = the energy or demand savings associated with the installed measure as discussed above.

EUL = the effective useful life of the measure. The EUL is calculated as the lamp/fixture life divided by the post-retrofit hours of operation. The lamp/fixture life was estimated based on data collected on site and through make and model lookups. The post-retrofit hours of operation were estimated (as discussed above) as the percent "ON" throughout the year. The EUL analysis is discussed in Section 5.4 and 5.5 .

4.2 LED STREETLIGHTING MEASURES

As shown in Table 2-3, LED streetlighting measures received a pass through for the gross savings values. A billing analysis was attempted for these measures, but the vast majority of customers (over 99% of savings) were on a rate (PG&E's LS-2 tariff) where bills were calculated and not metered. Bills were typically calculated based on reported installed wattage values and an assumed 4,100 annual hours of use. Annual hours of use matched the ex ante assumption. The calculated bills were not used to estimate ex post gross savings values because there was no verification of the wattage assumptions in the bills, and there was uncertainty as to the number of streetlights on a given bill.

The ex ante assumptions for these measures assume they are replacement on burnout and use a high pressure sodium lamp as the baseline. This is consistent with what is assumed to be industry standard practice (ISP). During the participant phone surveys, customers typically reported removing high pressure sodium lamps thus providing some level of confirmation of this ISP baseline. Consideration was also given to gathering self-reported wattage values during the participant phone surveys. However, there were approximately 45,000 streetlights installed by 42 unique customers, and multiple wattage lamps were typically installed and replaced by each customer, so gathering this information during the phone survey was not considered to be feasible.

As a result, ex post savings values were not estimated for LED Streetlights, and ex ante savings values were passed through. As discussed below, a NTG analysis was conducted to estimate NTGRs.

4.3 OUTDOOR LED MEASURES

The evaluation team utilized a dual baseline approach for outdoor LED fixture installations. The first year and lifecycle savings were calculated differently for measure installations that were found to be replacement on burn-out (ROB) compared to early replacement (ER). For ROB measures, impacts were

calculated across a single baseline throughout the EUL of the measure. For ER measures, the impacts were calculated differently for the remaining useful life or RUL period and the post-RUL period. A more detailed examination of the early replacement analysis is discussed in Section 5.5 .

First Year Impact for ROB

$$ROBImpact = MeasQty\ x\ PercentON\ x\ (Prewattage2 - PostWattage)$$

MeasQty = the quantity of rebated measures that were installed and operable on site. The installation rate analysis is presented Section 5.1 .

PercentON = the percentage of time the equipment is "ON" throughout the year for energy savings or the percentage of time the equipment is "ON" throughout the peak demand period for demand savings. The operating hour analysis is presented in Section 5.2 .

PreWattage2 = the wattage associated with the lighting disposition. For ROB measures, this is akin to an industry standard practice and is based on the wattage range of the retrofit equipment. An analysis of the second baseline is discussed in more detail in Section 5.3 .

PostWattage = the wattage associated with the installed measure. These estimates were developed using data collected onsite and through make and model lookups. The wattage analysis is discussed in Section 5.3 .

Lifecycle Impact for ROB

$$Lifecycle\ ROB\ Impact = ROBImpact\ x\ EUL$$

ROBImpact = the energy or demand savings associated with the installed measure as discussed above.

EUL = the effective useful life of the measure. The EUL is calculated as the lamp/fixture life divided by the post-retrofit hours of operation. The lamp/fixture life was estimated based on data collected on site and through make and model lookups. The post-retrofit hours of operation were estimated (as discussed above) as the percent "ON" throughout the year. The EUL analysis is discussed in Section 5.4 and 5.5 .

First Year Impact for ER

$$RULImpact = MeasQty\ x\ PercentON\ x\ (Prewattage1 - PostWattage)$$

MeasQty = the quantity of rebated measures that were installed and operable on site. The installation rate analysis is presented Section 5.1.

PercentON = the percentage of time the equipment is "ON" throughout the year for energy savings or the percentage of time the equipment is "ON" throughout the peak demand period for demand savings. The operating hour analysis is presented in Section 5.2.

PreWattage1 = the wattage associated with the replaced equipment. Throughout the RUL period, the in situ baseline is used to develop the delta wattage impact. These estimates were developed from baseline equipment reported to have been removed on site. The wattage analysis is discussed in Section 5.3.

PostWattage = the wattage associated with the installed measure. These estimates were developed using data collected on site and through make and model lookups. The wattage analysis is discussed in Section 5.3.

Lifecycle Impact for ER

$$Lifecycle\ ER\ Impact = (RULImpact\ x\ RUL) + (PostRULImpact\ x(EUL - RUL))$$

RULImpact = the energy or demand savings associated with the installed measure as discussed above.

RUL = the remaining useful life of the replaced equipment. This is calculated as 1/3 of the measure EUL following the DEER methodology. The RUL analysis is discussed in more detail in Section 5.5.

PostRULImpact = the equivalent of the ROBImpact for ROB measures. The expectation is that after the replaced equipment failed, a customer would install, at minimum, an industry standard practice measure (which is reflected in the PreWattage2 from the lighting disposition). An analysis of the second baseline is discussed in more detail in Section 5.3.

EUL = the effective useful life of the measure. The EUL is calculated as the lamp/fixture life divided by the post-retrofit hours of operation. The lamp/fixture life was estimated based on data collected onsite and through make and model lookups. The post-retrofit hours of operation were estimated (as discussed above) as the percent "ON" throughout the year. The EUL analysis is discussed in Section 5.4 and 5.5.

5 GROSS IMPACT EVALUATION PARAMETERS

There are a number of parameters that represent inputs into the savings algorithm for the measures that were evaluated including measure quantities installed, operating hours, coincidence factors (CF), post-retrofit wattages, first and second baseline wattages and measure EULs. As discussed above, the evaluation team employed a gross realization rate approach for this evaluation. This means that site-specific savings estimates were developed using the individual parameter estimates developed for each site-measure. Below is a discussion of those parameter estimates along with summaries from the on-site sample. Note that these summaries are weighted averages across the on-site sample and the parameter level estimates were not used to calculate the ex post impacts and gross realization rates. The GRRs are based on site-specific estimates of ex post savings.

5.1 INSTALLATION RATES

The installation rate is defined as the percentage of equipment found to be installed and operable. The evaluation team estimated the installation rate for each site-measure based on data gathered during the on-site visit. The auditor collected information to ascertain the quantity of rebated measures that were installed and operable along with a total disposition for the rebated measure.

The key measure count that is identified on site is the number of measures that are currently installed and in working condition (operable). The installation rate is calculated directly from this measurement. While the installation rate is not directly used in the impact algorithm (only the numerator in the below equation is used), it is implicit in the gross realization rate. If the measure quantity found on site is less that the rebated claim from the tracking data, the GRR drops accordingly:

$$\text{Installation Rate} = \frac{\text{Quantity of measures installed and operable from on-site visit}}{\text{Quantity of measures reported installed in tracking system}}$$

In addition to identifying the amount of equipment that was installed and operable, the auditor also identified the disposition of equipment that was:

- Failed and in place – The number of measures that are currently installed, but were not in working condition (failed).
- Failed and replaced – The number of measures that had been installed, but then had failed and were replaced with a different technology.
- Removed and not replaced - The number of measures that had been installed, but had been removed (either due to failure or other reasons) and were not replaced.

- In storage – The number of measures that were found in storage and have not yet been installed.

Although the installation rate is defined as the percent found to be in place and operable, the evaluation team also conducted an analysis to determine the percent of rebated measures that were actually received by a participant (received rate). This would include those in place and operable, burned out or replaced or placed in storage.

The following table presents the installation rates (defined as installed and operable), received rates (percent of rebated measures determined to have actually been received by the participants), storage rates and failure/removal rates for each ESPI measure. Also shown are the sample sizes and resulting relative precision measured at the 90% confidence interval.

TABLE 5-1: LIGHTING DISPOSITION AND INSTALLATION RATES FOR INDOOR LED MEASURES BY PA AND LED TYPE

PA	LED Type	n	Received Rate	Failure Rate	Storage Rate	Removal Rate	Install Rate	Install Rate RP
PGE	A-Lamp	53	100%	0%	2%	3%	94%	3%
	Downlight	27	99%	0%	1%	0%	98%	2%
	Reflector Lamp	54	100%	0%	2%	0%	97%	3%
	All	**134**	**100%**	**0%**	**2%**	**1%**	**97%**	**1%**
SCE	A-Lamp	73	100%	0%	2%	0%	98%	3%
	Downlight	30	99%	0%	0%	0%	99%	2%
	Reflector Lamp	44	100%	0%	0%	1%	99%	3%
	All	**147**	**100%**	**0%**	**1%**	**0%**	**98%**	**2%**
SDGE	A-Lamp	64	95%	0%	0%	1%	94%	3%
	Downlight	27	100%	0%	0%	0%	100%	1%
	Reflector Lamp	50	99%	0%	0%	3%	96%	4%
	All	**141**	**96%**	**0%**	**0%**	**1%**	**95%**	**2%**

Overall, the installation rates for indoor LED measures range from 94% for LED A-Lamps in SDG&E to 100% for downlighting in SDG&E. The most significant drivers of installation rates not being 100% at the time of the on-site verification were removals, customers not liking the ambient light created by the LED compared to the pre-existing equipment, and storage of equipment. The received rates were all 100% or nearly 100% with the exception of SDG&E A-Lamps. One customer in this segment was rebated 1,600 lamps, but the on-site surveyor found roughly 80% of that total. This assessment was confirmed by the on-site contact.

5.2 OPERATING HOUR ANALYSIS METHODOLOGY

Section 3.4.2 presented the total number of sites and loggers that were utilized to develop adjusted self-reported usage schedules and business hour rates, and Section 3.4.3 provided an inventory of the number of fixtures found on site by building type, activity area and control type.

The evaluation team utilized an adjusted self-report and business hour analysis[8], but only included logger data, self-report data and business hours that were collected and analyzed from rebated indoor LED installations. Given the wealth of logger data that were collected and analyzed over the past few program cycles, the factors and rates were developed at the control level – whether or not the rebated measure was controlled by a switch or an occupancy sensor. Overall, the analysis included 681 loggers monitoring rebated LED measures on switches at 285 sites. 110 loggers monitoring measures on an occupancy sensor were installed at 68 sites.

As part of the on-site verification for each of those studies, participants were asked to estimate their lighting usage by activity area within their building for each hour in the day throughout a typical work week. Since different activity areas within a building generally have different lighting schedules, the site contact was asked to estimate the operating schedule for each of the activity areas where rebated measures were installed. On-site surveyors also collected weekly business operating schedules from the site contact. In order to capture any variability in business hour operations throughout the year, the surveyors not only collected the open and close time for each day of the week, but they also captured any seasonal operations and holiday schedules. Finally, lighting loggers were installed to capture time-of-use data.

For those customers that were monitored, the evaluation team compared the participant's actual lighting usage to both their self-reported lighting usage and their business operating hours. Comparisons were made at the technology, building type, activity area level and control level. Furthermore, rather than simply comparing annual operating hours, comparisons were made for four different use periods (relative to self-reported business hours): Opening Shoulder, Open, Closed Shoulder, or Closed. The Open period was defined as all hours of the day for which the business was open. The Opening and Closing shoulders were defined as the two hours before opening and after closing, respectively. The Closed period was defined as all hours for which the business was closed, and not in one of the two shoulder periods. Finally, these comparisons were made at the day type level as well – Monday through Friday versus Saturday and Sunday.

For the open period, the evaluation team developed a ratio of actual logger to self-report by technology, building type, activity area, usage period and day type. Then these ratios, or adjustment factors, were

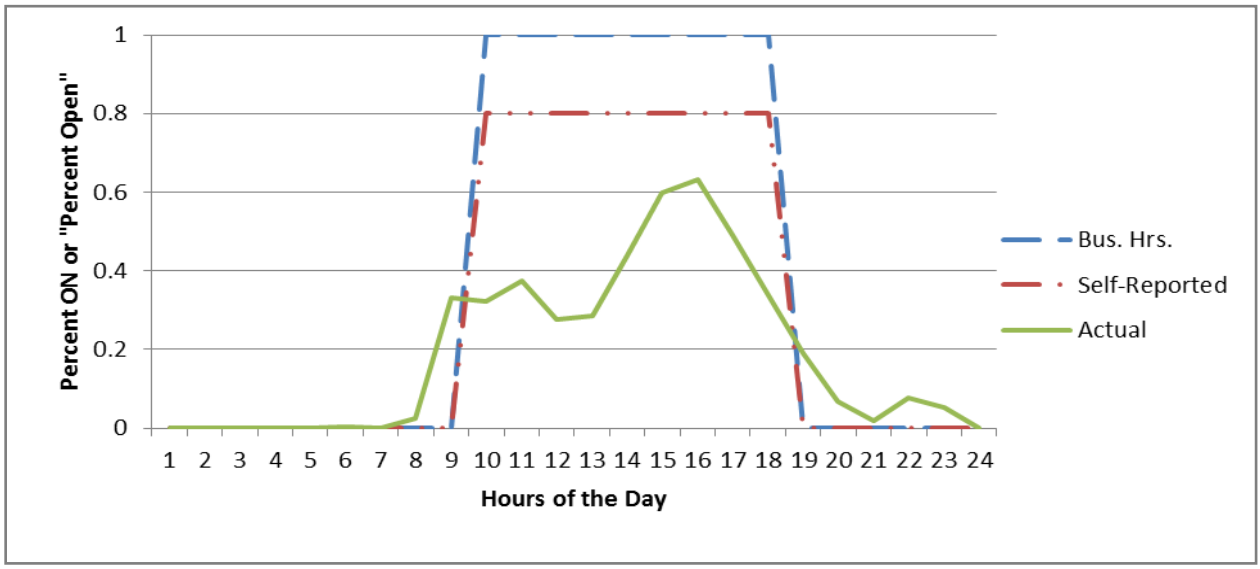
[8] Appendix C provides a detailed description of the adjusted self-report methodology.

developed such that they could be applied to a self-report schedule by building type and activity area, for the open period where lighting loggers were not deployed. However, for the closed and shoulder periods, rather than develop and apply adjustment factors, the evaluation team developed average usage values from the logger sample and these usage values were used directly for those time periods. The reason why adjustment factors were not developed and applied to these periods is that the self-reported usage during these periods was often claimed to be zero. A zero value cannot be adjusted by a multiplicative factor, so a constant factor was used. Again, this constant factor was the actual average usage found in the logger sample for those time periods and was applied by technology, building type, activity area and day type.

By applying the adjustment factors to the open time period, and the usage values to the closed and shoulder time periods, the evaluation team could develop proxy load shapes at several levels of disaggregation. Since not all technology, building type and activity area combinations were well represented, adjustment factors and usage rates were also developed at the technology-building type level as well as at the technology level alone.

Figure 5-1 provides an example of how the business hour rates and adjusted self-reports were developed based on monitoring within the office space of a small office. The business hour open period is represented by the blue line – a 9 am to 7 pm workday. The red line represents the customer self-reported schedule for that weekday. Note that the customer did not self-report any activity outside of open business hours and that the self-report was 20% less than the business hour estimates throughout that open period. The green line represents the average hourly logger data. The monitoring data are much lower than the business hour and self-report estimates throughout the open period and there is also significant variability throughout that time period. Likewise, the logger data captures usage outside of open hours.

FIGURE 5-1: EXAMPLE DAILY PROFILE OF BUSINESS HOURS, SELF-REPORTED SCHEDULE AND ACTUAL LOGGER DATA FOR AN LED A-LAMP INSTALLED IN AN OFFICE AREA



To validate this process, the evaluation team aggregated each of the site-activity area estimates for each of the time periods and day types discussed above and applied them to the self-reported schedules and business hours of sampled monitored LED participants from the 2010-2014 program periods. These estimates were then aggregated and compared to the actual monitored hours collected from logger data. Table 5-2 presents the results of that comparison.

TABLE 5-2: COMPARISON OF LOGGED AND ADJUSTED HOURS FROM 2010-2014 LED EVALUATIONS BY BUILDING TYPE

Building Type	n Sites	Monitored Hours	Adjusted Hours	Mean Difference	P-value
Assembly	60	1,762	1,681	81	0.35
Lodging	66	1,457	1,282	175	0.16
Office - Small	104	1,932	1,943	(11)	0.95
Other	24	3,935	3,725	210	0.56
Restaurant	130	3,895	3,896	(1)	1.00
Retail - Large	31	3,457	3,375	83	0.47
Retail - Small	96	3,205	3,344	(140)	0.10
All Building Types	**522**	**2,473**	**2,391**	**83**	**0.05**

The evaluation team conducted a paired T-test to compare the monitored hours to the adjusted hours. The monitored hours represent the actual aggregated profiles of logger data from LED measures that were

monitored in the 2010-2014 program years, and the adjusted hours represent aggregated profiles using the method discussed above. Overall, there is no statistically significant difference between the hours that were developed for each building type by the two methods discussed above.

As discussed above, the evaluation team utilized the adjustment process for deemed lighting measures. These analyses were conducted in order to develop 8,760 pre- and post-retrofit percent-ON load shapes at the site, measure and activity area level. These profiles were used to develop the site-specific gross impacts and are presented below both individually and aggregated up to the building type level. Each profile was weighted up by the number of fixtures that each represented in the population.

LED A-Lamps

As presented in Section 3.4.3 , LED A-lamps that were evaluated were installed within a variety of different space types and building types across all three PAs. The evaluation team did not develop on-site quotas by building type, but a variety of business types were ultimately represented in the sample. Table 5-3 to Table 5-5 present the annual operating hours and the coincidence factors for LED A-Lamps in PG&E, SCE and SDG&E, respectively. Also provided are the number of sites represented in the sample by each building type along with the overall relative precision at the 90% confidence interval for each measure.

For the purposes of presenting these results, building types that represented less than three sites in the on-site sample were combined into an "Other" category. The differences in annual operating hours and CFs across building types are predicated not only on the random nature of the on-site sampling within and across each PA, but on the distribution of activity area installation within and across building types.

TABLE 5-3: PGE LED A-LAMP POST-RETROFIT ANNUAL HOURS OF OPERATION AND COINCIDENCE FACTORS BY BUILDING TYPE

Building Type	n Sites	Annual Operating Hours	RP	Coincidence Factor	RP
Agriculture	3	3,870		0.83	
Lodging	14	2,186		0.24	
Office - Small	3	1,739		0.65	
Other	7	4,048		0.86	
Other Industrial	3	1,881		0.41	
Restaurant	3	3,708		0.65	
Retail - Small	12	2,741		0.63	
All Building Types	**45**	**2,541**	**14%**	**0.37**	**18%**

TABLE 5-4: SCE LED A-LAMP POST-RETROFIT ANNUAL HOURS OF OPERATION AND COINCIDENCE FACTORS BY BUILDING TYPE

Building Type	n Sites	Annual Operating Hours	RP	Coincidence Factor	RP
Assembly	11	1,463		0.16	
Health - Nursing	4	6,624		0.80	
Lodging	5	3,244		0.36	
Office - Small	11	1,000		0.30	
Other	5	7,473		0.80	
Other Industrial	4	866		0.13	
Restaurant	12	5,220		0.72	
Retail - Small	20	2,485		0.39	
All Building Types	**72**	**4,338**	**9%**	**0.51**	**9%**

TABLE 5-5: SDGE LED A-LAMP POST-RETROFIT ANNUAL HOURS OF OPERATION AND COINCIDENCE FACTORS BY BUILDING TYPE

Building Type	n Sites	Annual Operating Hours	RP	Coincidence Factor	RP
Assembly	6	891		0.11	
Lodging	6	2,001		0.22	
Office - Small	9	1,241		0.35	
Other	4	2,936		0.35	
Restaurant	9	3,903		0.66	
Retail - Small	24	2,042		0.50	
All Building Types	**58**	**2,403**	**7%**	**0.29**	**11%**

LED Downlighting

As presented in Section 3.4.3 , LED downlight measures that were evaluated were installed within a variety of difference space types and building types across all three PAs. Table 5-6 to Table 5-8 present the annual operating hours and the coincidence factors for LED downlights in PG&E, SCE and SDG&E, respectively. Also provided are the number of sites represented in the sample by each building type along with the overall relative precision at the 90% confidence interval for each measure.

Again, for the purposes of presenting these results, building types that represented less than three sites in the on-site sample were combined into an "Other" category. Downlights were represented in many of the same building types as A-Lamps. However, the annual hours of operation and CFs are generally higher

for this measure type within each building type. An example of this difference is in PG&E lodging segment. The average annual operating hours from the on-site sample for downlight measures in PG&E lodging was 4,246 hours (8 sites) compared to 2,186 hours (14 sites) for A-lamps. The downlight measure was generally installed in higher usage areas, like hallways and lobbies, than A-lamp installations. Similarly, building types like large offices were more represented in the downlight on-site sample.

TABLE 5-6: PGE LED DOWNLIGHT POST-RETROFIT ANNUAL HOURS OF OPERATION AND COINCIDENCE FACTORS BY BUILDING TYPE

Building Type	n Sites	Annual Operating Hours	RP	Coincidence Factor	RP
Lodging	8	4,246		0.49	
Office - Large	6	3,624		0.86	
Office - Small	3	4,427		0.63	
Other	4	2,728		0.61	
All Building Types	**21**	**3,904**	**16%**	**0.70**	**14%**

TABLE 5-7: SCE LED DOWNLIGHT POST-RETROFIT ANNUAL HOURS OF OPERATION AND COINCIDENCE FACTORS BY BUILDING TYPE

Building Type	n Sites	Annual Operating Hours	RP	Coincidence Factor	RP
Assembly	7	1,886		0.20	
Lodging	4	4,834		0.55	
Other	3	2,363		0.44	
Restaurant	9	5,137		0.72	
Retail - Small	7	3,011		0.75	
All Building Types	**30**	**3,401**	**17%**	**0.47**	**20%**

TABLE 5-8: SDGE LED DOWNLIGHT POST-RETROFIT ANNUAL HOURS OF OPERATION AND COINCIDENCE FACTORS BY BUILDING TYPE

Building Type	n Sites	Annual Operating Hours	RP	Coincidence Factor	RP
Assembly	4	1,329		0.20	
Lodging	4	2,529		0.35	
Multi-Family	3	7,487		0.89	
Office - Small	3	1,004		0.25	
Other	1	5,058		0.89	
Restaurant	4	3,169		0.48	
Retail - Small	5	2,559		0.66	
All Building Types	**24**	**2,795**	**21%**	**0.41**	**23%**

LED Reflector Lamps

As presented in Section 3.4.3, LED reflector measures that were evaluated were installed within a variety of different space types and building types across all three PAs. Again, this measure category includes a number of directional lamp types including MR-16, PAR30 and BR technologies. Table 5-9 to Table 5-11 present the annual operating hours and the coincidence factors for LED reflector lamps in PG&E, SCE and SDG&E, respectively. Also provided are the number of sites represented in the sample by building type along with the overall relative precision at the 90% confidence interval for each measure.

TABLE 5-9: PGE LED REFLECTOR LAMP POST-RETROFIT ANNUAL HOURS OF OPERATION AND COINCIDENCE FACTORS BY BUILDING TYPE

Building Type	n Sites	Annual Operating Hours	RP	Coincidence Factor	RP
Lodging	4	2,575		0.25	
Other	8	3,335		0.77	
Restaurant	4	3,950		0.76	
Retail - Small	17	2,476		0.60	
All Building Types	**33**	**3,073**	**8%**	**0.65**	**12%**

TABLE 5-10: SCE LED REFLECTOR LAMP POST-RETROFIT ANNUAL HOURS OF OPERATION AND COINCIDENCE FACTORS BY BUILDING TYPE

Building Type	n Sites	Annual Operating Hours	RP	Coincidence Factor	RP
Assembly	6	1,172		0.17	
Office - Small	8	1,659		0.53	
Other	5	2,043		0.31	
Retail - Small	13	3,190		0.63	
All Building Types	**32**	**1,997**	**19%**	**0.37**	**22%**

TABLE 5-11: SDGE LED REFLECTOR LAMP POST-RETROFIT ANNUAL HOURS OF OPERATION AND COINCIDENCE FACTORS BY BUILDING TYPE

Building Type	n Sites	Annual Operating Hours	RP	Coincidence Factor	RP
Assembly	3	1,350		0.40	
Lodging	3	2,570		0.01	
Office - Small	3	1,150		0.36	
Other	2	3,141		0.66	
Restaurant	7	4,549		0.77	
Retail - Small	5	2,565		0.73	
All Building Types	**31**	**3,256**	**11%**	**0.67**	**12%**

LED Outdoor Fixtures

The adjustment factor process that was utilized to estimate operating hours for indoor LED technologies was not employed for outdoor fixtures. The outdoor LED fixtures that were represented in the on-site sample were generally used for nighttime illumination and, as presented in Table 3-21, were generally controlled by a timeclock or photocell. In these cases, the evaluation team recorded the hourly schedules for these lights, which were garnered from the on-site contact, and used the minimum of that self-report and 4,100 hours (as per DEER). For example, if the site contact self-reported that the timeclock for an outdoor fixture was set from 9 pm to 1 am for all 365 days in the year, then annual hours of operation were estimated to be 1,460 hours (4 hours times 365 days). However, if the contact self-reported the operation into the daylight hours (from 3 pm to 10 am), then 4,100 hours were used. Coincidence factors were all zero based on the assumption that the lighting would not be operating during the peak demand period.

Table 5-12 and Table 5-13 provide the annual operating hour estimates for PG&E and SDG&E outdoor lighting, respectively. Also presented are the building types of installation and the number of sites represented in the on-site sample along with the relative precision at the overall level.

TABLE 5-12: PGE LED OUTDOOR FIXTURE POST-RETROFIT ANNUAL HOURS OF OPERATION BY BUILDING TYPE

Building Type	n Sites	Annual Operating Hours	RP	Coincidence Factor	RP
Other	9	4,014		-	
Other Industrial	3	3,964		-	
Retail - Small	3	4,100		-	
All Building Types	**15**	**4,009**	**3%**	**-**	

TABLE 5-13: SDGE LED OUTDOOR FIXTURE POST-RETROFIT ANNUAL HOURS OF OPERATION BY BUILDING TYPE

Building Type	n Sites	Annual Operating Hours	RP	Coincidence Factor	RP
Assembly	3	3,948		-	
Other	7	4,100		-	
All Building Types	**10**	**4,070**	**1%**	**-**	

5.3 PRE- AND POST-WATTAGE ANALYSIS METHODOLOGY

Another key set of parameters in the impact algorithm are the pre- and post-wattages. Generally, the evaluation team utilized on-site verification data to develop post-retrofit wattages for each deemed lighting measure. The pre-retrofit or baseline wattages were developed in a number of ways, which are discussed in more detail below.

5.3.1 Pre- and Post-Retrofit Wattage for Indoor LED Measures

The evaluation team primarily used make and model information gathered on site to develop post-retrofit wattages for deemed indoor LED measures. The surveyors attempted to collected make and model information for each rebated measure. In the event that make and model information was unavailable or that the fixture was inaccessible, the surveyor tried to collect wattage information directly off the lamp or fixture. In cases where the model information or visual inspection were not possible, the evaluation team developed average wattage values based on the type of LED (A-lamp, reflector or downlight) and the wattage range associated with that weighted average (4-9W or 10-15W).

As discussed in Section 3.4.1, the pre-existing or baseline equipment was often not found on site as it was generally removed after the retrofit and before the on-site verification. Given this limitation in available baseline data, the evaluation team employed a few different approaches to estimate pre-retrofit (baseline) wattages. For LED A-lamps, reflector lamps and downlighting, the evaluation team:

- combined all the on-site verification data that was collected as part of this evaluation along with the 2013 and 2014 indoor LED impact evaluations.[9]
- combined all the post-retrofit wattage estimates that were collected from make and model lookups and developed wattage bins based on technology type.
- subset out any measure from the combined 2013-15 dataset where the baseline equipment was not known. In other words, the evaluation team only kept measures where the baseline equipment was confirmed during the on-site verification from each of the evaluations.[10]
- developed a wattage reduction ratio (WRR) – which is the ratio of the baseline wattage to the post-retrofit wattage. These WRRs were developed at the wattage configuration (bin) level.

The evaluation team then examined the 2015 on-site data and determined, once again, which measures also had confirmed baseline equipment. As presented in Table 3-9 to Table 3-11 baseline equipment was often not found onsite. However, for measures where the baseline equipment was confirmed, the baseline wattage was estimated as the minimum of the 1) confirmed baseline wattage and 2) post-retrofit wattage times the WRR for that wattage configuration. For all other measures where the baseline equipment could not be confirmed, the WRR was applied to the post-retrofit wattage to develop the baseline wattage.

Table 5-14 presents the WRRs that were developed from the combined 2013-2015 evaluations and applied to the 2015 LED site-measures. As an example, an LED A-lamp with a confirmed 7.0 wattage was binned into the 4-9 wattage range. If the baseline equipment for that measure was also found onsite (in storage or in an unrebated area) and was less than 29.1 watts (WRR of 4.3 times 7.0), then the baseline wattage would represent the replaced equipment. If the baseline wattage was greater than 29.1 or if the baseline equipment was not found on site, then 29.1 watts would represent the baseline for that measure throughout the EUL of the measure. In the event that a post-retrofit wattage range was not represented

9 http://www.calmac.org/ (Calmac ID: CPU0139)

10 The evaluation team deviated from this approach for LED downlighting. One technology that was installed at several different sites in 2015 was specifically a plug-in play replacement for CFLs. For every one of these measures, the site contact self-reported CFL in the baseline (no baseline equipment was found on site). The evaluation team included the self-reported CFL baseline for this technology in the baseline analysis given the nature of the technology.

in the combined 2013-2015 data, but was found on site in 2015, an overall WRR was used based on the LED type.

Overall, the WRRs vary across LED types as well as within LED types. LED A-lamps have the lowest ratios of the three measure types. Over the course of the 2013-2015 program years, these lamps were generally replacing a mix of incandescent and CFL technologies. Downlighting was not an evaluated measure in 2013-2014, so the WRRs for this measure category are based on 2015 data alone and include the self-reported CFL baseline for one specific plug-in play technology. The overall WRR for LED reflector technologies is 3.8, however, the 4-9W bin is much higher than the measure average. This is driven most directly by lower wattage MR-16 technologies replacing higher wattage halogen lamps.

TABLE 5-14: WATTAGE REDUCTION RATIOS FOR INDOOR LED BY MEASURE TYPE AND WATTAGE RANGE

LED Type	Wattage Range	n	PreWatts	PostWatts	WRR	Relative Precision
A-Lamp	4-9W	25	35.6	8.4	4.3	
	10-15W	35	26.2	11.2	2.3	
	>15W	2	46.0	16.0	2.9	
	All	**62**	**30.6**	**10.2**	**3.0**	**15%**
Downlighting	10-15W	27	43.4	12.6	3.5	
	>15W	3	61.7	19.0	3.2	
	All	**30**	**45.3**	**13.2**	**3.4**	**18%**
Reflectors	4-9W	16	46.1	7.0	6.6	
	10-15W	27	40.1	12.4	3.2	
	>15W	15	59.2	18.1	3.3	
	All	**58**	**46.7**	**12.4**	**3.8**	**13%**

The evaluation team developed site-measure specific pre-retrofit wattages based on a combination of baseline equipment, WRRs and post-wattages in order to develop ex post gross savings. The resulting pre- and post-retrofit wattages are presented below in Table 5-15 to Table 5-17 for each PA and measure type along with the number of unique measure observations and the resulting relative precision measured at the 90% confidence interval. Again, it is important to note that these summaries are weighted averages across the on-site sample and were not explicitly used to calculate the ex post impacts and gross realization rates. The measure level delta wattages were based on site-specific estimates.

TABLE 5-15: PGE PRE- AND POST-RETROFIT WATTAGE ESTIMATES BY MEASURE TYPE AND WATTAGE RANGE

LED Type	Wattage Range	n	PreWatts	PreWatt RP	PostWatts	Post Watt RP
A-Lamp	4-9W	36	33		8	
	10-15W	12	23		11	
	>15W	5	35		17	
	All	**53**	**28**	**6%**	**10**	**5%**
Downlighting	4-9W	2	28		8	
	10-15W	22	36		13	
	>15W	3	42		19	
	All	**27**	**36**	**9%**	**13**	**4%**
Reflectors	4-9W	23	51		8	
	10-15W	22	39		12	
	>15W	9	55		17	
	All	**54**	**45**	**5%**	**12**	**7%**

TABLE 5-16: SCE PRE- AND POST-RETROFIT WATTAGE ESTIMATES BY MEASURE TYPE AND WATTAGE RANGE

LED Type	Wattage Range	n	PreWatts	PreWatt RP	PostWatts	Post Watt RP
A-Lamp	4-9W	16	26		9	
	10-15W	56	23		11	
	>15W	1	46		16	
	All	**73**	**25**	**6%**	**11**	**3%**
Downlighting	10-15W	29	41		12	
	>15W	1	62		19	
	All	**30**	**42**	**4%**	**12**	**3%**
Reflectors	4-9W	16	49		7	
	10-15W	19	36		12	
	>15W	9	57		17	
	All	**44**	**45**	**6%**	**12**	**8%**

TABLE 5-17: SDGE PRE- AND POST-RETROFIT WATTAGE ESTIMATES BY MEASURE TYPE AND WATTAGE RANGE

LED Type	Wattage Range	n	PreWatts	PreWatt RP	PostWatts	Post Watt RP
A-Lamp	4-9W	28	35		8	
	10-15W	35	25		11	
	>15W	1	55		19	
	All	**64**	**26**	**3%**	**11**	**2%**
Downlighting	4-9W	1	31		9	
	10-15W	20	38		12	
	>15W	6	78		24	
	All	**27**	**44**	**12%**	**13**	**12%**
Reflectors	4-9W	30	51		8	
	10-15W	17	40		12	
	>15W	3	59		18	
	All	**50**	**49**	**4%**	**9**	**8%**

5.3.2 Pre- and Post-Retrofit Wattage for Outdoor LED Measures

The evaluation team primarily used make and model information gathered onsite to develop post-retrofit wattages for deemed outdoor LED measures. The surveyors attempted to collect make and model information for each rebated measure. As presented in Table 3-12, make and model information for outdoor fixtures was often unavailable or the fixture was inaccessible, so the surveyor tried to collect wattage information directly off the lamp or fixture. In cases where the model information or visual inspection were not possible, the evaluation team developed average wattage values based on the on-site sample that had model information.

As discussed in Section 3.4.1, baseline equipment was not available for any of the rebated outdoor LED measures, so the evaluation team relied on self-reported information from the site contact regarding the baseline equipment type and associated wattage. Also, LED outdoor fixtures are subject to a dual baseline. For measures that were classified as early replacement (ER), the in situ baseline was used throughout the remaining useful life (RUL) period. For measures that were classified as replacement on burnout (ROB) and for the post-RUL period for ER measures, the baseline was set to the wattage detailed in the lighting disposition.

The resulting pre- and post-retrofit wattages are presented below in Table 5-18 for the outdoor LED fixture measure along with the number of unique measure observations and the resulting relative precision (note that there is no precision estimate presented for the 2nd baseline wattage since the same wattage was used for all measures within the specified wattage range).

TABLE 5-18: STATEWIDE PRE- AND POST-RETROFIT WATTAGE ESTIMATES FOR OUTDOOR LED FIXTURES BY WATTAGE RANGE

LED Type	Wattage Range	n	1st baseline Wattage	1st Baseline RP	2nd Baseline	PostWatts	Post Watt RP
Outdoor Fixture	<50W	11	119		85	27	
	50-100W	11	264		120	72	
	101-150W	9	383		176	127	
	>150W	1	288		234	175	
	All	**32**	**215**	**18%**	**115**	**62**	**21%**

5.4 MEASURE SERVICE LIFE

The service life of the installed equipment has a significant impact on the overall lifecycle savings of the measure. For each measure, the service life was calculated at the post-retrofit configuration level much like the wattage estimates. As part of the make-model lookups, the evaluation team also collected manufacturer rated lamp life for each model found on site. These values were collected from the manufacturer cut sheets. In cases where the model information was not available, the evaluation team developed the service life based on the type of LED (A-lamp, reflector or downlight) and the wattage range associated with that weighted average (4-9W or 10-15W). The same methodology applies to the outdoor fixture measure.

Table 5-19 presents the estimates of service life for each of the evaluated LED measures along with the number of evaluated measures and associated relative precisions at the 90% confidence interval. While not directly used in this evaluation, the mean lumen levels are also presented for each LED type and wattage range. LED A-lamps and reflector lamps have similar rated lamp lives while downlighting measures are generally in the 38,000 to 43,000 hour range. Outdoor fixtures have the highest manufacturer fixture life at roughly 72,000 hours for the 101-150W range.

TABLE 5-19: LAMP AND FIXTURE SERVICE LIFE BY LED MEASURE AND WATTAGE RANGE

LED Type	Wattage Range	n	Service Life	Service Life RP	Mean Lumens	Mean Lumens RP
A-Lamp	4-9W	80	24,911		729	
	10-15W	103	25,352		824	
	>15W	7	25,557		1,611	
	All	**190**	**25,231**	**1%**	**828**	**3%**
Downlighting	4-9W	3	38,253		604	
	10-15W	71	43,154		789	
	>15W	10	40,253		1,577	
	All	**84**	**43,031**	**4%**	**816**	**5%**
Reflectors	4-9W	69	27,376		522	
	10-15W	58	24,245		802	
	>15W	21	28,379		1,131	
	All	**148**	**26,178**	**3%**	**757**	**4%**
Outdoor Fixtures	<50W	11	45,029		1,986	
	50-100W	11	50,000		7,153	
	101-150W	9	72,293		13,690	
	All	**32**	**52,299**	**9%**	**5,886**	**25%**

5.5 EUL/RUL ANALYSIS

In order to develop lifecycle savings for each measure, the EUL was calculated. The EUL is a function of the service life of the measure divided by the ex post annual operating hours. The EUL is defined as:

$$\text{EUL} = \text{Minimum of either } \frac{Service\ Life\ (hours)}{Annual\ Hours\ of\ Use} \text{ or 15 years.}$$

Where:

Service Life = the rated service life of the measure as outlined above in Table 5-19.

Annual Hours of Use = the site-specific estimate of post-retrofit annual hours of operation as outlined in Table 5-3 through Table 5-13.

Another parameter that influences the lifecycle savings is the RUL, which is represented in dual baseline measures like the LED outdoor fixtures. In order to estimate a site-specific impact for a participant, the evaluation team first determined if the installation was ROB (or natural replacement [NR]) or ER. If the

evaluation determined that the installation was ER, the RUL was estimated as one third of the EUL following the DEER methodology.

For ER installations, the replaced equipment represented the baseline wattage during the RUL period and the baseline wattage set out in the lighting disposition represented the baseline wattage in the post-RUL period. For ROB/NR installations, the lighting disposition served as the baseline wattage throughout the EUL of the outdoor LED measure.

5.5.1 ROB/NR/ER Determination for Outdoor LED Fixtures

In order to classify an installation as being ER, there must be "a preponderance of evidence that an energy efficiency program activity induced or accelerated equipment replacement. Early retirement measures must provide justification that the existing equipment being replaced would have continued to function and perform its original design intent for a period of time in absence of the replacement."[11]

Therefore, to determine if an installation is ER, the evaluation team first determined if the equipment was replaced on burnout or was approaching the end of its useful life. If the equipment would not have been able to function as intended for at least a year, the installation was classified as an ROB. If not, the evaluation team then examined if the program influenced an accelerated replacement or if the customer was likely to have replaced the equipment at roughly the same time in the absence of the program. If the customer was likely to have replaced the equipment at roughly the same time in the absence of the program, the installation was considered NR. If not, then the installation was classified as ER.

Table 5-20 below presents the ER and ROB designation for the outdoor LED fixtures that were evaluated. Of the 32 unique site-measures that were evaluated, 20 (63%) were determined to be ROB with the remaining 12 deemed ER. There were a number of factors that led to the ROB designation including the poor condition of the baseline equipment, the age of the equipment being greater than the EUL, the expected remaining useful life being less than 1 year and the likelihood of installing the LED measure in absence of the program.

[11] From CPUC guidance document "Project Basis (RET, ROB, etc.), EUL/RUL Definitions, & Preponderance of Evidence" dated 1/29/14.

TABLE 5-20: ER/ROB/NR RESULTS FOR OUTDOOR LED FIXTURES

ER/ROB	>50% Failed	Poor Condition	Age >=EUL	Expected Life <=1	Likely to Install	Influential Non-program Factor	n	% of Sites
ER	0	0	0	0	0	0	9	28%
ER	0	0	0	0	1	0	3	9%
ER Total							**12**	**38%**
ROB	0	0	1	0	0	0	12	38%
ROB	0	0	1	0	1	0	3	9%
ROB	0	1	0	0	0	0	2	6%
ROB	0	1	0	1	0	0	1	3%
ROB	0	1	1	0	0	0	2	6%
ROB Total							**20**	**63%**

6 GROSS IMPACT PARAMETER COMPARISONS

The objective of this study was to perform a measure and/or measure-parameter impact evaluation, utilizing existing evaluation data and new primary evaluation data in order to update existing gross and/or net savings estimates and inform future savings values for specific lighting measures identified in the ESPI decision. As presented throughout this report, the gross savings values incorporate several different variables, including installation rates, operating hours, coincidence factors, installed/replaced wattages, industry standard wattages and EULs. Likewise, some measures have a dual baseline, which affect the lifecycle savings associated with the measure. The differences in ex post savings relative to the ex ante claim are predicated on differences among these variables. The following section presents the sample strata level first year and lifecycle gross realization rates for the evaluated measures and also presents a high level comparison of the ex ante assumptions to the ex post impacts that were developed as a result of the gross analysis.

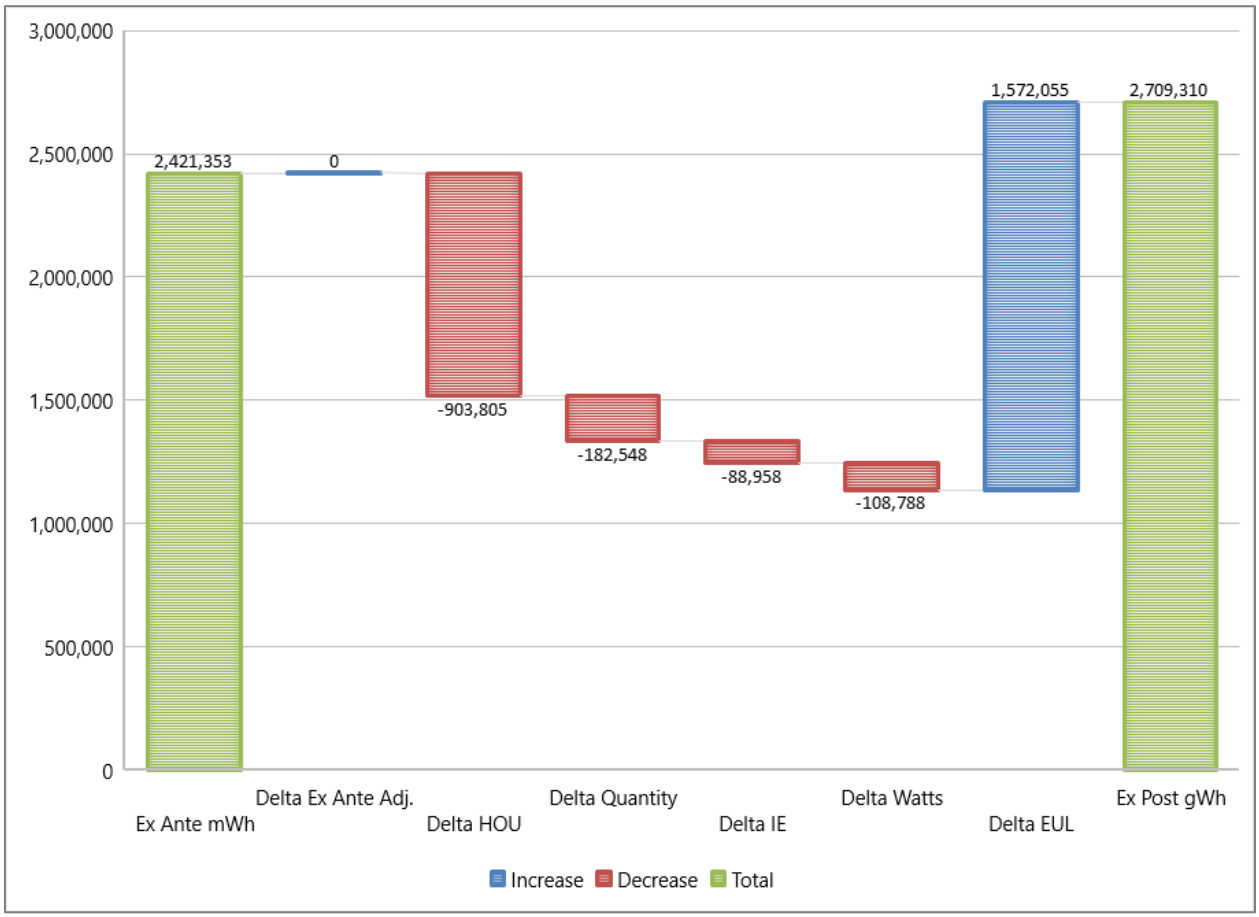
Section 8 presents the final aggregated first year and lifecycle GRRs and NRRs along with the specific algorithm that the evaluation team used to develop these rates and the ex post impacts, but the sample level results are presented below to better understand why the GRR is not equal to 100% for the indoor LED measures that were evaluated. Table 6-1 presents those findings and what follows is a discussion of which specific parameters are driving those realization rates.

TABLE 6-1: SAMPLE FIRST YEAR AND LIFECYCLE GROSS REALIZATION RATES

PA	LED Type	Sites	1st Year GRR		Lifecycle GRR	
		n	kWh	kW	kWh	kW
PGE	A-Lamp	45	76%	63%	112%	84%
	Downlight	21	165%	157%	208%	230%
	Reflector Lamp	33	80%	90%	107%	126%
SCE	A-Lamp	72	136%	87%	106%	71%
	Downlight	30	127%	99%	176%	139%
	Reflector Lamp	32	84%	88%	131%	131%
SDGE	A-Lamp	58	60%	50%	91%	79%
	Downlight	24	115%	99%	160%	147%
	Reflector Lamp	31	110%	129%	154%	183%

Overall, the sample gross lifecycle kWh realization rates for each of the evaluated measure categories are greater than 100%, with the exception of SDG&E A-lamps at 91%. The waterfall figures below provide context and a high level explanation of what specific parameters are driving these realization rates.[12]

FIGURE 6-1: PGE LED A-LAMP EX ANTE TO EX POST KWH IMPACT WATERFALL

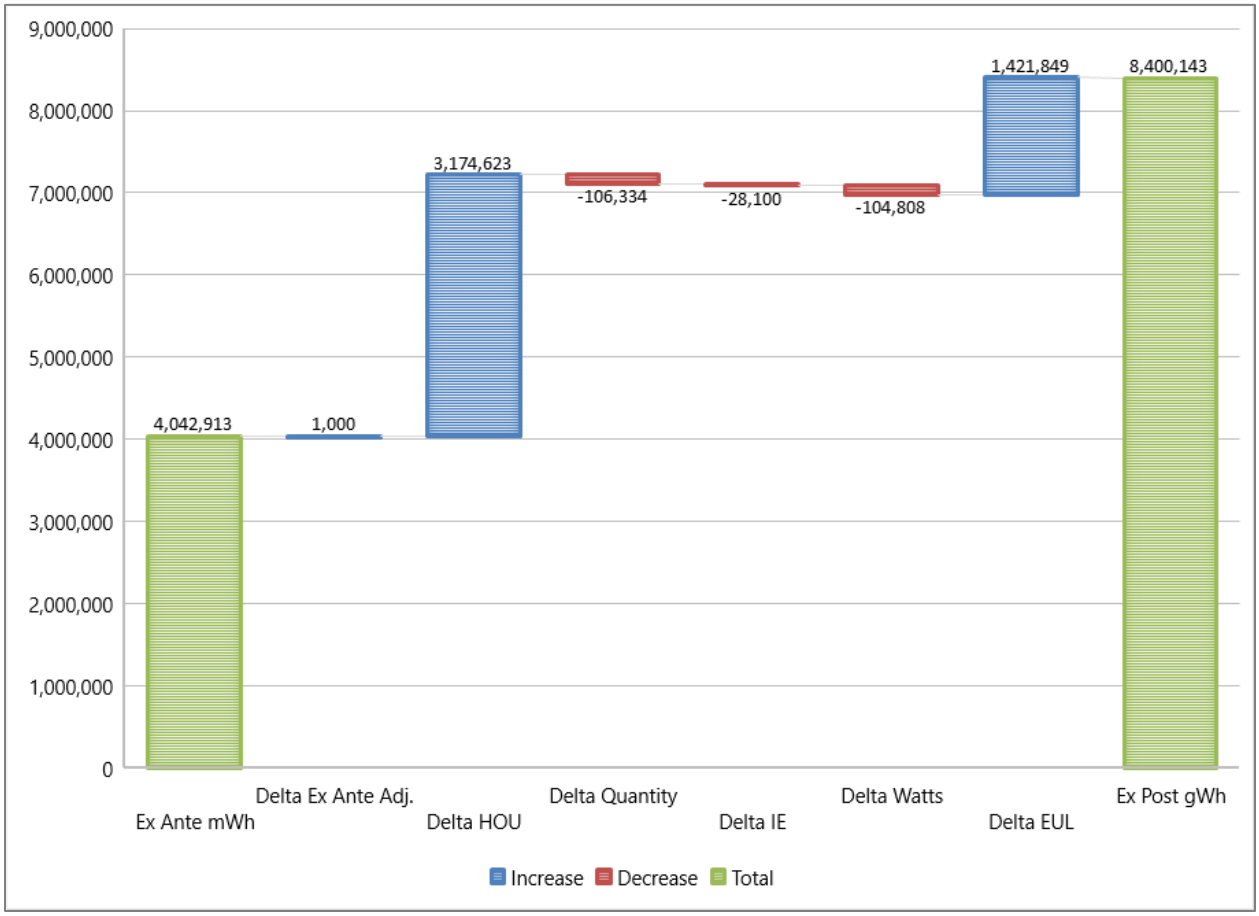


- **PG&E A-Lamps**
  - The gross lifecycle kWh for PG&E A-lamps is 112%. Figure 6-1 details how each of the impact parameters are influencing the overall GRR. The ex post installation rate for this measure

[12] The ex ante parameter data used for this comparative analysis was created from IOU workpapers, data given directly by the PAs and data downloaded from DEER. The delta ex ante adjustment, which is more prominent with SDGE LED measures, represents the difference between what was reported in the tracking data versus the ex ante parameter data from the described sources. Most adjustments seem to be due to rounding error, however, some adjustments reflect some inconsistency between the ex ante data given and tracking data reported.

was roughly 8% lower than the ex ante claim. The ex post delta wattage (the difference between the baseline and installed wattage) and energy interactive effects were roughly 4% less than the ex ante claim. The most significant differences are the ex post operating hours, which are roughly 37% lower than the ex ante claim and the ex post EUL, which is roughly 65% higher than the ex ante. The lower operating hours contribute to the higher EUL (lower hours suggests that the life of the bulb, in the ex post case, will extend further in time), but this is also compounded by the higher ex post measure life that was calculated for these measures.

FIGURE 6-2: PGE LED DOWNLIGHT EX ANTE TO EX POST IMPACT WATERFALL



- **PG&E LED Downlighting**
  - The gross lifecycle kWh GRR for this measure category is 208%. Figure 6-2 details how each of the impact parameters are influencing the overall GRR. Overall, the ex post installation

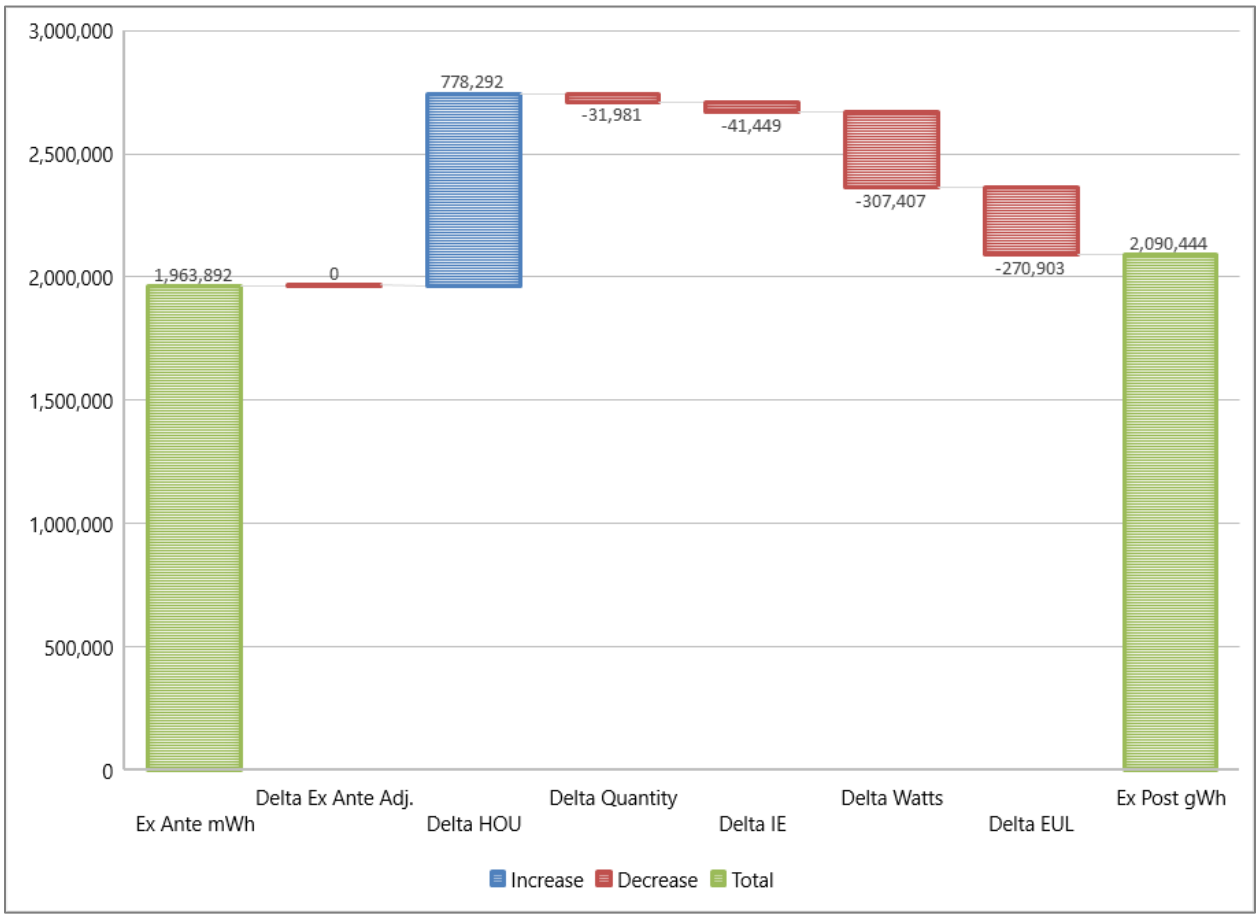
rates, delta watts and energy interactive effects compare well to the ex ante claim (3%, 3% and 1% less, respectively). The significantly higher ex post impacts are driven by higher operating hours (79% greater). Given the significantly higher operating hours, one might suspect that the ex post EUL would be lower than the ex ante claim. However, the ex post EUL is still roughly 35% greater than the ex ante claim. This is driven primarily by the higher measure life estimates for these measures compared to ex ante assumptions.

FIGURE 6-3: PGE LED REFLECTOR LAMP EX ANTE TO EX POST IMPACT WATERFALL

- **PG&E LED Reflector Lamps**
  - Overall, the lifecycle kWh GRR for reflector lamps is 107%. The ex post installation rates, operating hours, energy interactive effects and delta wattages were all less than the ex ante claim. However, the ex post EUL was estimated at 35% higher than the ex ante claim which makes the lifecycle ex post savings, overall, 7% greater than the ex ante savings. The higher

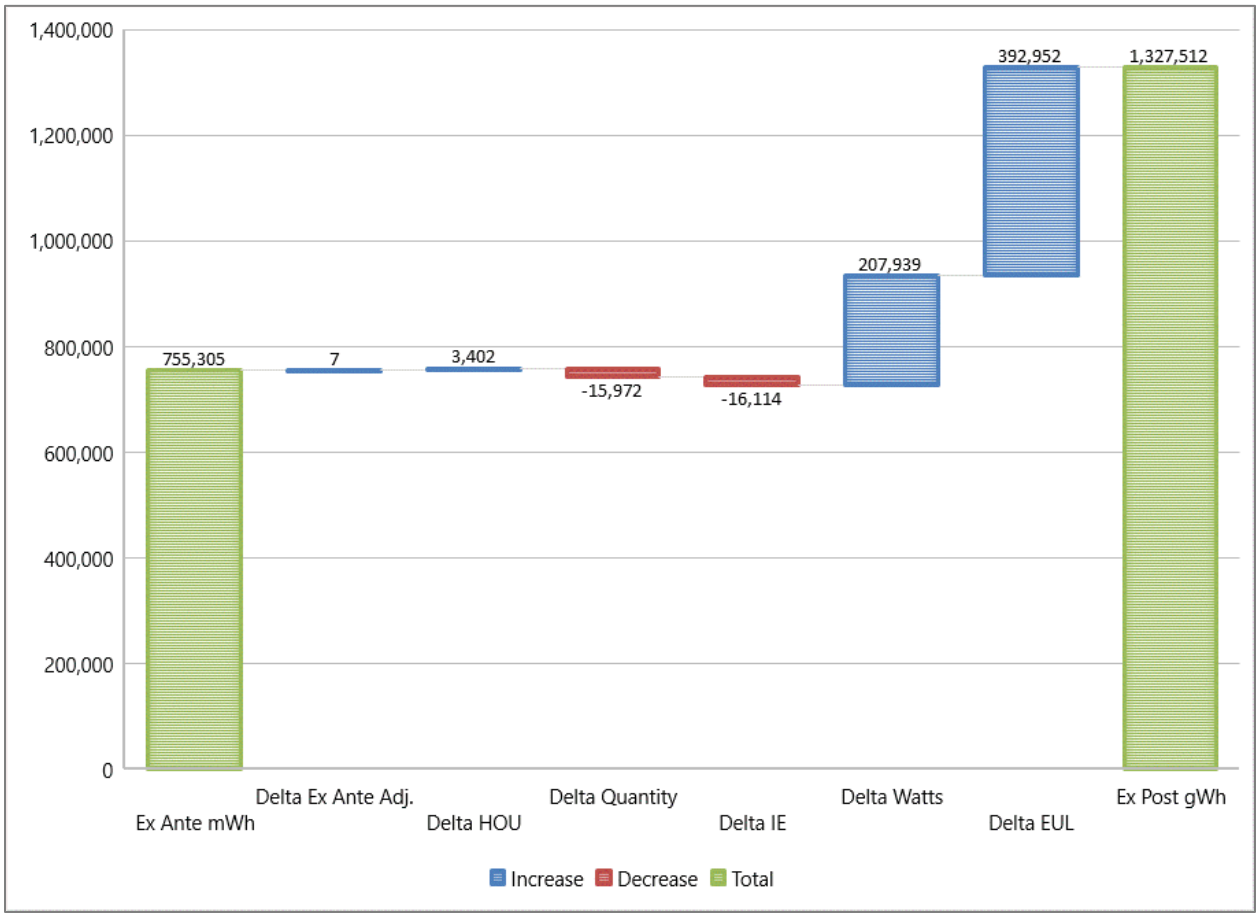
ex post EUL is driven by lower ex post operating hours and a higher ex post measure life. These differences are presented above in Figure 6-3.

FIGURE 6-4: SCE LED A-LAMP EX ANTE TO EX POST IMPACT WATERFALL



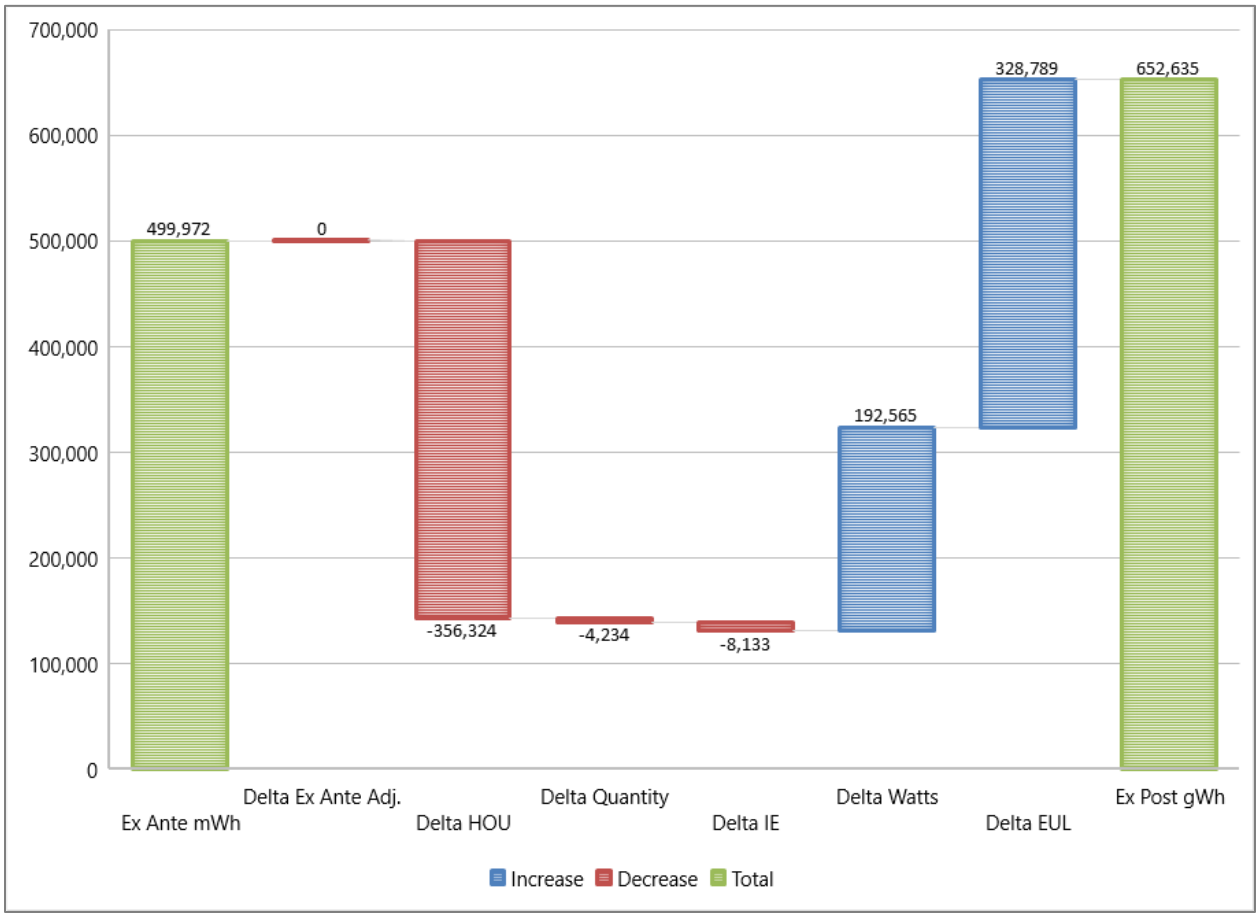
- **SCE LED A-Lamps**
  - Overall, the sample lifecycle kWh GRR for SCE A-lamps is 106%. The ex post installation rate and energy interactive effects for this measure were roughly 2% lower than the ex ante claim. The ex post delta wattage (the difference between the baseline and installed wattage) was roughly 16% less than the ex ante claim. The most significant differences are the ex post operating hours, which are roughly 40% greater than the ex ante claim. The higher ex post operating hours contribute to a lower ex post EUL (14% less), but not by the same order of magnitude. Again, the ex post lamp life for these measures were higher than ex ante assumptions, but the difference in EUL is not as significant as the difference in hours.

FIGURE 6-5: SCE LED DOWNLIGHT EX ANTE TO EX POST IMPACT WATERFALL



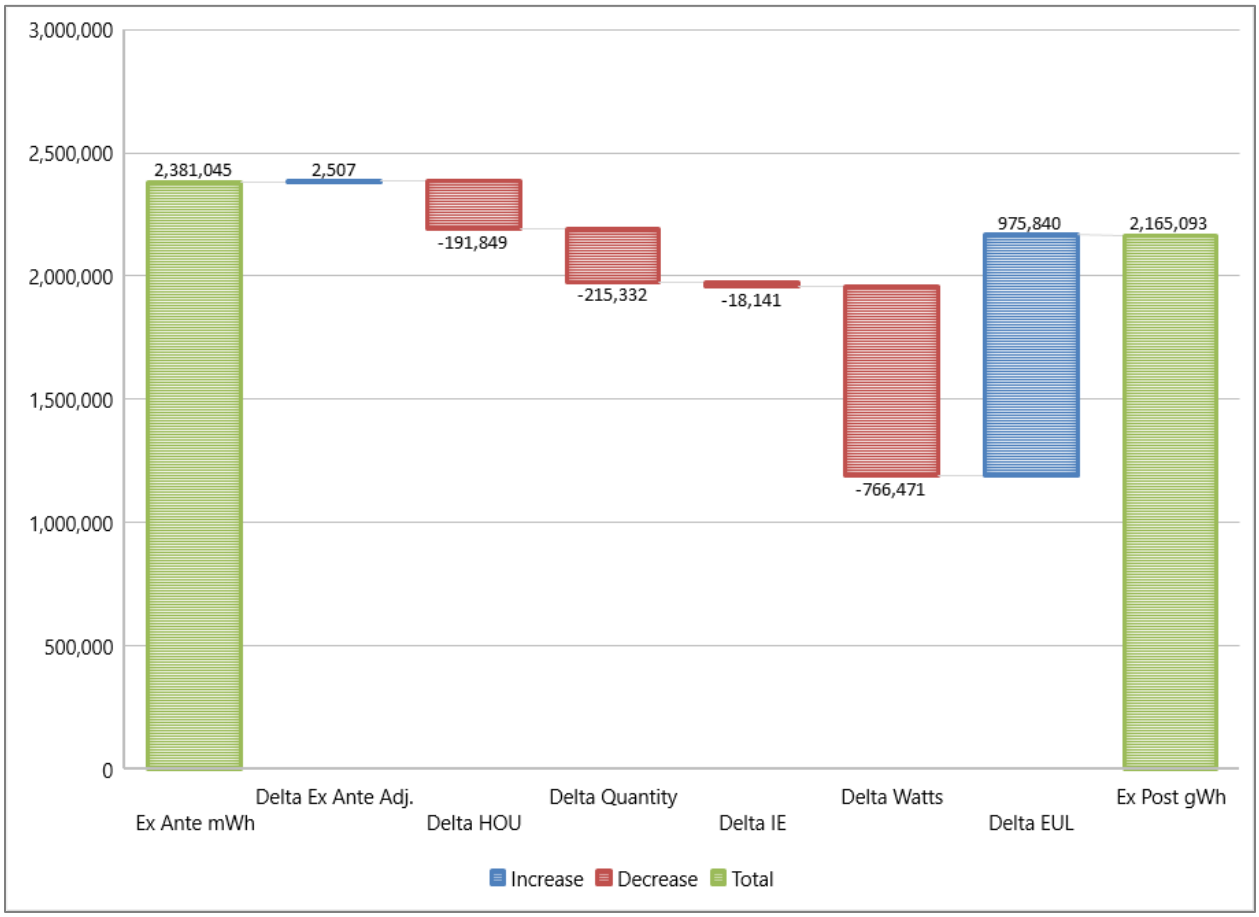
- **SCE LED Downlighting**
  - The sample gross lifecycle kWh GRR for this measure category is 176%. The ex post installation rates, operating hours and energy interactive effects are within 3% of the ex ante claim. The significantly higher ex post impacts are driven by a higher ex post delta wattage (28% greater). The ex post EUL is also significantly higher than the ex ante claim (52% greater) even though the ex post operating hours are only 2% less. Again, this is driven by a much higher ex post measure life for LED downlighting.

FIGURE 6-6: SCE LED REFLECTOR LAMP EX ANTE TO EX POST IMPACT WATERFALL



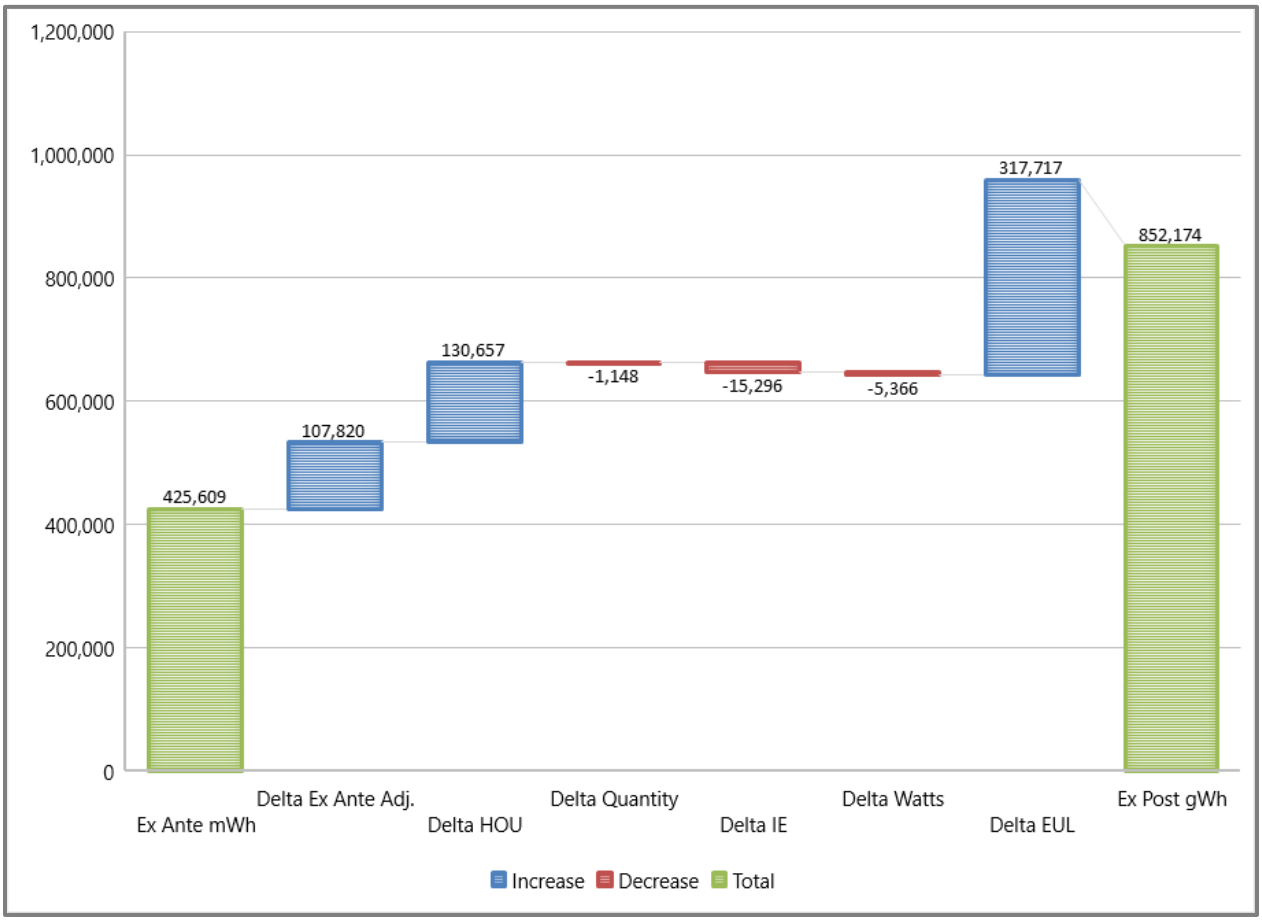
- **SCE LED Reflector Lamps**
  - Overall, the sample kWh GRR for reflector lamps is 131%. The ex post installation rates were virtually identical to the ex ante claim, energy interactive effects were roughly 2% less, the ex post delta wattage was 39% greater and the operating hours were 71% less than ex ante claims. The combination of lower ex post operating hours and a greater measure life results in an ex post EUL 66% higher than the ex ante claim.

FIGURE 6-7: SDGE LED A-LAMP EX ANTE TO EX POST IMPACT WATERFALL



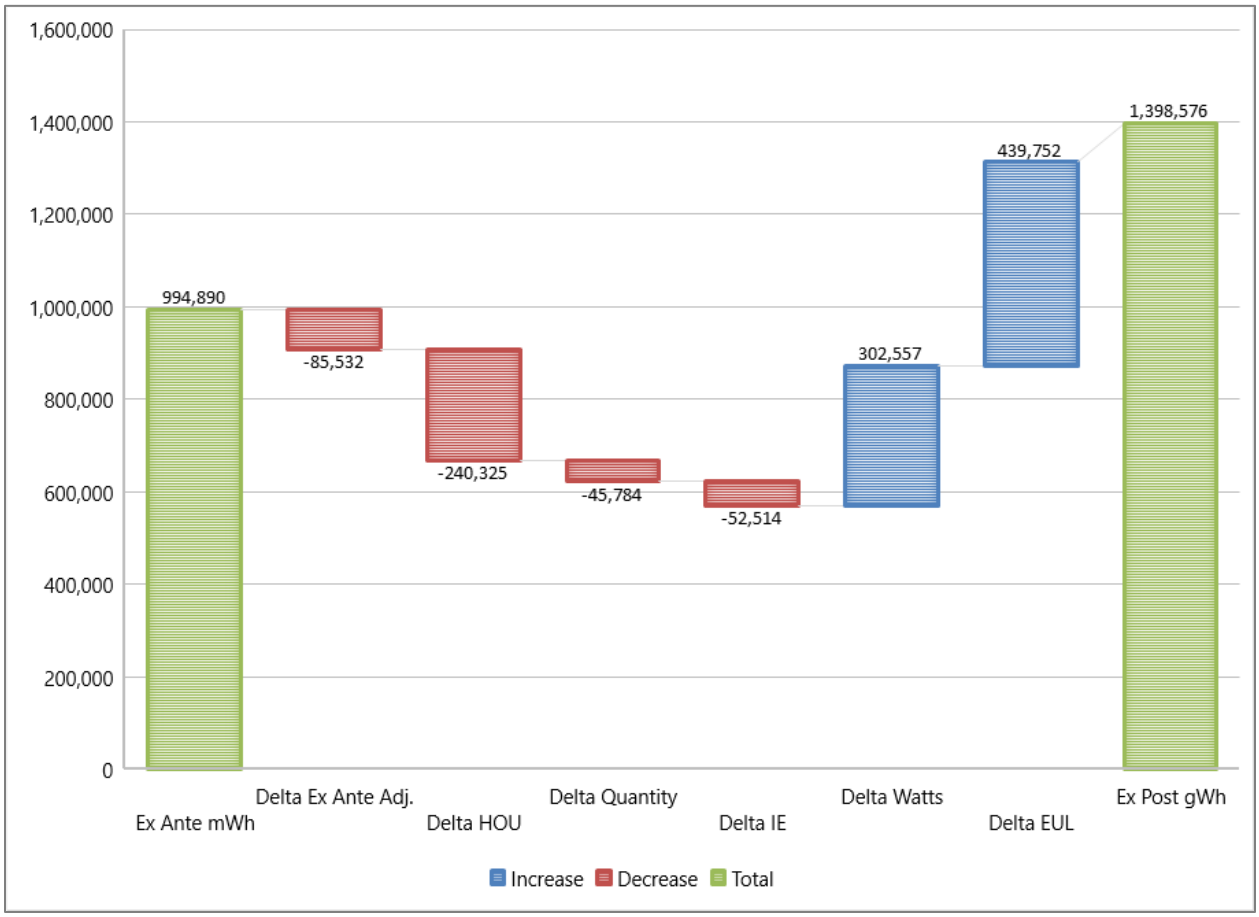
- **SDG&E LED A-Lamps**
  - Overall, the sample lifecycle kWh GRR for SDG&E A-lamps is 91%. The ex post installation rate for this measure was roughly 9% lower than the ex ante claim. The ex post operating hours were roughly 8% less than the ex ante claim. The most significant difference is the ex post delta wattage, which is roughly 32% less than the ex ante claim. The slightly lower ex post operating hours and greater measure life result in a 41% higher ex post EUL.

FIGURE 6-8: SDGE LED DOWNLIGHT EX ANTE TO EX POST IMPACT WATERFALL



- **SDG&E LED Downlighting**
  - The sample gross lifecycle kWh GRR for this measure category is 160%. The ex post installation rates, delta watts and energy interactive effects are within 3% of the ex ante claim. The significantly higher ex post impacts are driven by higher ex post operating hours (24% greater) much like was found in PG&E. The ex post EUL is also significantly higher than the ex ante claim (60% greater). Again, this is driven by a much higher ex post measure life for LED downlighting.

FIGURE 6-9: SDGE LED REFLECTOR LAMP EX ANTE TO EX POST IMPACT WATERFALL



- **SDG&E LED Reflector Lamps**
  - The sample gross lifecycle kWh GRR for this measure category is 154%. The ex post installation rates and energy interactive effects are within 6% of the ex ante claim. The significantly higher ex post impacts are driven by higher ex post delta watts (33% greater). The ex post EUL is also significantly higher than the ex ante claim (48% greater). Again, this is driven by a higher ex post measure life and lower ex post operating hours (26% less).

7 NET TO GROSS ANALYSIS

The phone surveys that were conducted for this evaluation served not only to verify the installation of sampled measures and recruit for the on-site verification, but also to acquire information about the influence of the program on the purchase and installation of the measure. The questions asked of interviewees were designed to gather information that allowed the evaluation team to estimate participant free-ridership to support the development of net-to-gross ratios (NTGRs) and net savings values. A standard battery of NTG questions was asked of all phone survey respondents who purchased and installed different indoor and outdoor LED technologies

The approach for estimating NTGRs for these customers was based on the large non-residential free-ridership approach developed by the NTGR Working Group and documented in the *Methodological Framework for Using the Self-Report Approach to Estimating Net-to-Gross Ratios for Non-residential Customers*.[13]

The resulting NTGRs were calculated as the average of three program attribution indices (PAI) known as PAI-1, PAI-2, and PAI-3. Each of these scores represents the highest response or the average of several responses given to one or more questions about the decision to install a program measure.

- **Program Attribution Index 1 (PAI–1)** is a score that reflects the influence of the most important of various program-related elements in the customer's decision to select a given program measure. The PAI-1 score is calculated as the highest program influence factor divided by the sum of the highest program influence factor and the highest non-program influence factor. Some examples of non-program factors are: previous experience with the measure, recommendation from an engineer, standard practice, corporate policy, compliance with rules or regulations, organizational maintenance or equipment replacement policies and "other – specify." Payback is treated as a program influence factor if the rebate/incentives played a major role in meeting payback criteria, but is treated as a non-program influence factor if it did not play a major role in meeting payback criteria.
- **Program Attribution Index 2 (PAI–2)** is a score that captures the perceived importance of program factors (including rebate/incentives, recommendation, and training) relative to non-program factors in the decision to implement the specific measure that was eventually adopted or installed. This score is determined by asking respondents to assign importance values to the program and most important non-program influences so that the two total 10. The program

[13] The net-to-gross ratio (NTGR) is equal to one minus free ridership. Spillover is not included in the NTGR. A separate nonresidential spillover study was conducted by the CPUC and can be found on www.energydataweb.com.

influence score is adjusted (i.e., divided by 2) if respondents had made the decision to install the measure before learning about the program. The final score is divided by 10 to be put into decimal form, thus making it consistent with PAI-1.

- **Program attribution index 3 (PAI–3)** is a score that captures the likelihood of various actions the customer might have taken at the given time and in the future if the program had not been available (the counterfactual). This score is calculated as 10 minus the likelihood that the respondent would have installed the same measure in the absence of the program. The final score is divided by 10 to put into decimal form, thus making it consistent with PAI-1 and PAI-2.

The NTGR was estimated as an average of these three scores. If one of the scores was not available (generally due to respondents giving a "don't know" or "refusal" response), then the NTGR was estimated as the average of the two available score. If two or more scores were missing, results were discarded from the calculation.

7.1 NET TO GROSS RESULTS

Table 7-1 presents the ex post NTGR scores by sample strata that were developed using the above methodology. Also presented are the ex ante NTG values as well as the average PAI1, PAI2 and PAI3 scores for each segment. These data are weighted by ex post lifecycle kWh.

- PGE Indoor LEDs
  - The ex post NTG ratios are all less than the ex ante value for each of the three PG&E LED measure types and, overall, the ex post is 0.55 compared to an ex ante NTG of 0.65.
  - The weighted PAI1 scores across the sample of participants is 0.49 which suggests that, on average, program participants valued program factors equally to non-program factors. There is more variability in the PAI2 scores across measure segments with reflector lamps and A-lamps having higher overall scores than downlighting. The overall PAI2 of 0.65 suggests, on average, that program participants perceived the importance of program related factors slightly more than non-program factors. In other words, given 10 points to allocated between program and non-program factors, participants allocated more points to program factors. The PAI3 scores are fairly similar across segments.
- SCE Indoor LEDs
  - The ex post NTG ratios are all greater than the ex ante NTG for all three SCE LED measure types and, overall, the ex post is 0.63 compared to an ex ante NTG of 0.61.
  - The most significant drivers of this are the PAI2 and PAI3 scores, especially when one examines the A-Lamp PAI2 scores and the downlight/reflector lamp PAI3 scores. Again, the

overall A-Lamp PAI2 score of 0.86 suggests, on average, that program participants perceived the importance of program related factors much more than non-program factors. The 0.74 and 0.76 PAI3 scores for downlighting and reflector lamps suggests, on average, that customers were not likely to have installed the same equipment had the program not been available.

- SDG&E Indoor LEDs
  - SDG&E participants have the highest strata level and overall ex post NTG ratios compared to the other PAs. The overall ex post NTG is 0.67 compared to the ex ante value of 0.60.
  - The most significant drivers of this are the PAI2 and PAI3 scores across all three measure types.

TABLE 7-1: EX ANTE AND EX POST NET-TO-GROSS RATIOS AND PAI SCORES FOR INDOOR LED MEASURES BY LED TYPE

PA	LED Type	Sites	NTG		PAI Score		
		n	Ex Ante	Ex Post	PAI1	PAI2	PAI3
PGE	A-Lamp	47	0.70	0.57	0.49	0.67	0.55
	Downlight	40	0.60	0.53	0.49	0.58	0.51
	Reflector Lamp	48	0.66	0.57	0.49	0.72	0.52
	All	**135**	**0.65**	**0.55**	**0.49**	**0.65**	**0.52**
SCE	A-Lamp	55	0.60	0.63	0.50	0.86	0.54
	Downlight	40	0.62	0.63	0.52	0.62	0.74
	Reflector Lamp	40	0.60	0.62	0.53	0.59	0.76
	All	**135**	**0.61**	**0.63**	**0.51**	**0.73**	**0.65**
SDGE	A-Lamp	45	0.60	0.65	0.54	0.72	0.68
	Downlight	30	0.60	0.64	0.41	0.77	0.75
	Reflector Lamp	30	0.60	0.71	0.51	0.81	0.80
	All	**105**	**0.60**	**0.67**	**0.50**	**0.77**	**0.74**

Table 7-2 presents the ex post NTGR scores for outdoor LED fixtures and LED streetlighting. Also presented are the ex ante NTG values as well as the average PAI1, PAI2 and PAI3 scores for each segment. These data are weighted by ex post lifecycle kWh.

- LED outdoor fixtures
  - The overall ex post NTG for outdoor LED fixtures is roughly 26% less than the ex ante value.
  - The 0.41 PAI2 score suggest, on average, that participants view non-program factors slightly higher than program factors.

- LED street lighting
  - The overall ex post NTG for LED street lighting is roughly 12% less than the ex ante value.
  - The 0.51 PAI2 score suggests, on average, that street lighting participants favored program factors and non-program factors equally in their decision to participate in the program.

TABLE 7-2: EX ANTE AND EX POST NET-TO-GROSS RATIOS AND PAI SCORES FOR OUTDOOR LED MEASURES

PA	LED Type	Sites	NTG		PAI Score		
		n	Ex Ante	Ex Post	PAI1	PAI2	PAI3
SW	LED Outdoor Fixtures	38	0.61	0.45	0.50	0.41	0.44
SW	LED Street lighting	27	0.60	0.53	0.49	0.51	0.58

Table 7-3 presents the ex post NTGR scores for indoor delamping for PG&E and SCE. Also presented are the ex ante NTG values as well as the average PAI1, PAI2 and PAI3 scores for each segment. These data are weighted by ex post lifecycle kWh.

- PG&E Delamping
  - The overall ex post NTG for PG&E delamping measures is slightly higher than the ex ante value (0.63 compared to 0.61).
  - The 0.67 PAI2 score suggest, on average, that participants view program factors more than non-program factors. The 0.72 PAI3 score suggests, on average, that customers were less likely to have installed the same equipment had the program not been available.
- SCE Delamping
  - The overall ex post NTG for SCE delamping measures is higher than the ex ante value (0.69 compared to 0.60).
  - The 0.73 PAI2 score suggests, on average, that participants view program factors more than non-program factors. The 0.81 PAI3 score suggests, on average, that customers were much less likely to have installed the same equipment had the program not been available.

TABLE 7-3: EX ANTE AND EX POST NET-TO-GROSS RATIOS AND PAI SCORES FOR DELAMPING MEASURES BY PA

PA	Measure Type	Sites	NTG		PAI Score		
		n	Ex Ante	Ex Post	PAI1	PAI2	PAI3
PGE	Delamping	51	0.61	0.63	0.52	0.67	0.72
SCE	Delamping	32	0.60	0.69	0.52	0.73	0.81

Table 7-4 presents the ex post NTGR scores for occupancy sensor measures in SCE and SDG&E. Also presented are the ex ante NTG values as well as the average PAI1, PAI2 and PAI3 scores for each segment. These data are weighted by ex post lifecycle kWh.

- SCE occupancy sensors
  - The overall ex post NTG for SCE occupancy sensors is roughly 18% lower than the ex ante value (0.51 compared to 0.62).
  - Each of the three PAI scores are within the 0.48 to 0.54 range.
- SDG&E occupancy sensors
  - The overall ex post NTG for SDG&E occupancy sensor measures is virtually identical the ex ante value (each of these scores are rounded).
  - The 0.74 PAI2 score suggests, on average, that participants view program factors more than non-program factors. The 0.84 PAI3 score suggests, on average, that customers were much less likely to have installed the same equipment had the program not been available.

TABLE 7-4: EX ANTE AND EX POST NET-TO-GROSS RATIOS AND PAI SCORES FOR OCCUPANCY MEASURES BY PA

PA	Measure Type	Sites	NTG		PAI Score		
		n	Ex Ante	Ex Post	PAI1	PAI2	PAI3
SCE	Occupancy Sensors	39	0.62	0.51	0.48	0.51	0.54
SDGE	Occupancy Sensors	31	0.69	0.69	0.50	0.74	0.84

Table 7-5 presents the overall ex ante and ex post NTG ratios for each of the measures discussed above along with the relative precision. These results are weighted by ex post lifecycle kWh or by ex post KW.

TABLE 7-5: EX ANTE AND EX POST NET-TO-GROSS RATIOS BY PA AND LED TYPE

PA	Measure Type	Sites	NTG kWh			NTG kW		
		n	Ex Ante	Ex Post	RP	Ex Ante	Ex Post	RP
PGE	Indoor LED	135	0.65	0.55	4%	0.64	0.55	4%
	Delamping	51	0.61	0.63	5%	0.61	0.63	5%
SCE	Indoor LED	135	0.61	0.63	3%	0.60	0.63	3%
	Delamping	32	0.60	0.69	4%	0.60	0.68	4%
	Occupancy Sensors	39	0.62	0.51	11%	0.62	0.51	11%
SDGE	Indoor LED	105	0.60	0.67	3%	0.60	0.68	3%
	Occupancy Sensors	31	0.69	0.69	4%	0.69	0.69	5%
SW	Outdoor LED	38	0.61	0.45	11%	-	-	-
SW	Outdoor Street Light	27	0.60	0.53	6%	-	-	-

8 EVALUATION RESULTS

This section of the report presents the gross and net realization rates that the evaluation team developed for the 2015 deemed ESPI lighting measures discussed throughout the report. These results are presented for both first year and lifecycle MW and MWh savings.

8.1 GROSS FIRST YEAR REALIZATION RATES

The evaluation team estimated gross realization rates (GRR) by examining the ratio of the aggregate evaluated gross savings to the aggregated ex ante gross savings. The evaluation team utilized the following algorithm to develop customer specific GRRs:

$$Gross\_Realization\_Rate = \frac{\sum_{i=1}^{n} Gross\_Ex\_Post\_Impact_i}{\sum_{i=1}^{n} Gross\_Ex\_Ante\_Impact_i}$$

Where:

$Gross\_Ex\_Post\_Impact_i$ = the site-specific gross ex post impact estimate for customer i in the population.

$Gross\_Ex\_Ante\_Impact_i$ = the site-specific gross ex ante impact estimate for customer i in the population.

Table 8-1 below presents the population level first year gross MWh and MW realization rates for evaluated deemed ESPI lighting measures along with the aggregate ex ante and ex post first year MWh and MW savings. The corresponding relative precisions at the 90% confidence interval are also presented.

TABLE 8-1: POPULATION FIRST YEAR GROSS MWH AND MW REALIZATION RATES FOR EVALUATED MEASURES

PA	ESPI Measure	First Year Gross MWh Savings				First Year Gross MW Savings			
		Ex Ante Savings	Ex Post Savings	GRR	RP	Ex Ante Savings	Ex Post Savings	GRR	RP
PGE	Indoor LED	39,810	39,277	99%	7%	8.2	8.0	98%	12%
	Delamping	9,092	9,092	100%		2.1	2.1	100%	
SCE	Indoor LED	66,661	79,834	120%	10%	13.2	11.9	90%	14%
	Delamping	2,156	2,156	100%		0.5	0.5	100%	
	Occupancy Sensors	840	840	100%		0.2	0.2	100%	
SDGE	Indoor LED	19,279	17,069	89%	6%	3.4	3.0	89%	6%
	Occupancy Sensors	195	195	100%		0.0	0.0	100%	
SW	Outdoor LED	14,426	20,534	142%	29%				
SW	Outdoor Street Light	11,418	11,418	100%					

8.2 GROSS LIFECYCLE REALIZATION RATES

Table 8-2 presents the population level gross lifecycle MWh and MW realization rates for the evaluated deemed ESPI lighting measures along with the aggregate ex ante and ex post lifecycle MWh and MW savings. The corresponding relative precisions at the 90% confidence interval are also presented.

TABLE 8-2: POPULATION LIFECYCLE GROSS MWH AND MW REALIZATION RATES FOR EVALUATED MEASURES

PA	ESPI Measure	Lifecycle Gross MWh Savings				Lifecycle Gross MW Savings			
		Ex Ante Savings	Ex Post Savings	GRR	RP	Ex Ante Savings	Ex Post Savings	GRR	RP
PGE	Indoor LED	269,426	364,060	135%	4%	54.8	77.4	141%	7%
	Delamping	44,940	44,940	100%		10.5	10.5	100%	
SCE	Indoor LED	477,330	604,930	127%	8%	91.4	90.4	99%	13%
	Delamping	21,259	21,259	100%		5.3	5.3	100%	
	Occupancy Sensors	6,716	6,716	100%		1.4	1.4	100%	
SDGE	Indoor LED	147,348	180,612	123%	6%	24.6	31.0	126%	4%
	Occupancy Sensors	1,564	1,564	100%		0.4	0.4	100%	
SW	Outdoor LED	158,928	190,052	120%	27%				
SW	Outdoor Street Light	137,016	137,016	100%					

8.3 NET FIRST YEAR REALIZATION RATES

The evaluation team estimated the net ex post impacts in a similar manner as the gross impacts, however, the NTG ratios were multiplied by the gross impacts. The resulting net realization rates (NRR) represent the ratio of aggregated evaluated net savings to the aggregated ex ante net savings. The evaluation team utilized the following formula to develop customer specific NRRs:

$$Net\_Realization\_Rate = \frac{\sum_{i=1}^{n} Net\_Ex\_Post\_Impact_i}{\sum_{i=1}^{n} Net\_Ex\_Ante\_Impact_i}$$

Where:

$Net\_Ex\_Post\_Impact_i$ = the site-specific net ex post impact estimate for customer i in the population

$Net\_Ex\_Ante\_Impact_i$ = the site-specific net ex ante impact estimate for customer i in the population.

Table 8-3 below presents the population level first year MWh and MW net realization rates for the evaluated deemed ESPI lighting measures along with the aggregate ex ante and ex post first year net MWh and MW savings. The net realization rate is impacted by the difference in ex ante and ex post gross savings along with the differences between the ex ante and ex post NTG ratios.

TABLE 8-3: POPULATION FIRST YEAR NET MWH AND MW REALIZATION RATES FOR EVALUATED MEASURES

PA	ESPI Measure	First Year Net MWh Savings				First Year Net MW Savings			
		Ex Ante Savings	Ex Post Savings	NRR	RP	Ex Ante Savings	Ex Post Savings	NRR	RP
PGE	Indoor LED	25,876	21,717	84%	8%	5.3	4.4	83%	13%
	Delamping	5,545	5,767	104%	5%	1.3	1.3	104%	5%
SCE	Indoor LED	41,511	50,306	121%	10%	8.2	7.5	92%	14%
	Delamping	1,294	1,484	115%	4%	0.3	0.4	114%	4%
	Occupancy Sensors	568	426	75%	11%	0.1	0.1	74%	11%
SDGE	Indoor LED	11,703	11,478	98%	7%	2.1	2.1	101%	6%
	Occupancy Sensors	135	135	100%	4%	0.0	0.0	100%	5%
SW	Outdoor LED	9,143	9,288	102%	31%				
SW	Outdoor Street Light	6,880	6,042	88%	6%				

8.4 NET LIFECYCLE REALIZATION RATES

Table 8-4 presents the population lifecycle MWh and MW net realization rates for the evaluated deemed ESPI lighting measures along with the aggregate ex ante and ex post lifecycle net MWh and MW savings. The corresponding relative precisions at the 90% confidence interval are also presented.

TABLE 8-4: POPULATION LIFECYCLE NET MWH AND MW REALIZATION RATES FOR EVALUATED MEASURES

PA	ESPI Measure	Lifecycle Net MWh Savings				Lifecycle Net MW Savings			
		Ex Ante Savings	Ex Post Savings	NRR	RP	Ex Ante Savings	Ex Post Savings	NRR	RP
PGE	Indoor LED	175,055	200,881	115%	5%	35.6	42.4	119%	8%
	Delamping	27,416	28,503	104%	5%	6.4	6.7	104%	5%
SCE	Indoor LED	297,928	380,633	128%	8%	56.9	57.3	101%	13%
	Delamping	12,755	14,632	115%	4%	3.2	3.6	114%	4%
	Occupancy Sensors	4,548	3,404	75%	11%	1.0	0.7	74%	11%
SDGE	Indoor LED	89,822	120,803	134%	6%	15.0	21.0	140%	5%
	Occupancy Sensors	1,079	1,083	100%	4%	0.2	0.2	100%	5%
SW	Outdoor LED	99,968	85,961	86%	29%				
SW	Outdoor Street Light	82,558	72,505	88%	6%				

9 CONCLUSIONS AND RECOMMENDATIONS

This section of the report provides conclusions and recommendations related to the findings that were developed from this evaluation.

Conclusion 1 [Section 4.2]: High pressure sodium (HPS) and low pressure sodium (LPS) represented the self-reported baseline equipment for all LED streetlight retrofits. All 27 city managers that were interviewed for the streetlight measure self-reported that the equipment that was removed and replaced with LED technologies was either High Pressure Sodium (HPS) or Low Pressure Sodium (LPS). They also mentioned that it was standard practice and/or policy to replace lamps as they burned out with the same technology type.

Recommendation 1: While the municipal streetlight market is shifting toward LED technologies, the current ex ante assumption which uses HPS as the baseline should continue to be used.

Conclusion 2a [Section 5.2 and Section 6]: Overall, ex post operating hours for LED downlight measures were dramatically different than ex ante claims. The evaluation team conducted on-site verification work at over 230 nonresidential facilities throughout California and all three indoor evaluated LED types were represented in a variety of different business types and space types. While there were measurable differences between ex ante and ex post operating hours for each technology type, downlight kits were generally installed in high usage areas like lobbies and hallways that can operate at or near to 8,760 hours and the differences between ex ante and ex post were quite dramatic (ex post operating hours were 79% higher than ex ante).

Conclusion 2b [Section 3.4.3]: A number of sampled nonresidential facilities were on energy management systems (EMS) and many of the measure installations represented dimmable technologies. The evaluation team verified a greater percentage of nonresidential sites that operated on EMS schedules compared to prior evaluations. The operation of these schedules along with the advanced dimming capabilities associated with both baseline and retrofit equipment can have a significant impact on the load profiles for these sites and measures.

Recommendation 2: Based on the above two conclusions, future evaluations should consider conducting a large scale logger study, especially for technologies like LED downlights and reflector lamps installed in high usage areas. The annual operation of these technologies can have potentially significant impacts on realized energy and demand savings moving forward. Likewise, the presence of EMS and advanced dimming capabilities, along with the fact that these technologies are generally recessed into the ceiling, suggest that monitoring studies should consider alternative monitoring

techniques (like panel metering and other connected devices) to augment traditional photocell logging techniques. The study should be conducted by technology and building type to capture differences across building type within a given technology.

Conclusion 3 [Section 5.3.1 and Section 6]: The average replaced wattages for screw-in LED A-Lamps continue to decrease relative to prior evaluations, however, this is not necessarily true for reflector lamps and downlighting. The evaluation team continued to verify the increased percentage of lower wattage CFLs in the baseline for A-lamp technologies. Reflector lamps and downlighting, however, continue to have a significant share of incandescent and halogen in the baseline with the exception of some plug-in play technologies. This is evidenced by the higher wattage reduction ratios (WRR) that were estimated for these measures.

Recommendation 3: Future evaluations should continue to track and verify (where possible) the replaced/baseline wattage of all LED measure installations to determine, for LED A-Lamps, if the percentage of CFLs in the baseline continues to grow, and for reflector lamps and downlighting, if there are any significant changes in the distribution of baseline technologies moving forward.

APPENDIX A PHONE SURVEY INSTRUMENT

Participant Survey for CPUC
2015 Commercial Evaluation

INTRODUCTION AND FINDING CORRECT RESPONDENT

OUTCOME1

This is _____ calling on behalf of the CPUC, from ITRON CONSULTING. THIS IS NOT A SALES CALL NOR A SERVICE CALL. May I please speak with ...<%CONTACT> ...<%OLDCONTACT> ... <%BUSINESS> ... the person at your organization that is most knowledgeable about your participation in <%UTILITY>'s <%PROGRAM> program.
!___[IF NEEDED]...This is a fact-finding survey only, authorized by the California Public Utilities Commission.

1	Yes (go to next screen)	Continue
2	Make appointment	Make appt and record time
3	Busy/engaged	Record Response and T&T
4	No Answer	Record Response and T&T
5	Refused	Record Response and T&T
6	Disconnected	Record Response and T&T
7	Answering Machine - no message	Record Response and T&T
8	Duplicate	Record Response and T&T
9	DRNA	Record Response and T&T

10	Disability	Record Response and T&T
11-12	Language Barriers	Record Response and T&T
13	Answering Machine - left message	Record Response and T&T
14	NO SCREEN - Participant	Record Response and T&T
15	Hang up	Record Response and T&T
16	Residence	Record Response and T&T
17	Fax	Record Response and T&T
18	Quota full	Record Response and T&T
19	Wrong Address	Record Response and T&T
20	Home office	Record Response and T&T
21	Max attempts	Record Response and T&T
24	General callback	Record Response and T&T
25	Name/Number changed	Record Response and T&T

Thank & Terminate PBLOCK NO_ONE	Thank you for your time. For this study, we need to speak to someone about your organization's installation of energy efficient equipment that your organization installed through <%UTILITY>'s <%PROGRAM> program.	END

Q1B	[IF YOU ARE TRANSFERRED TO ANOTHER PERSON OTHER THAN THE BEST CONTACT]Who would be the person most familiar about your organization's participation in <%UTILITY>'S <%PROGRAM> program? [ENTER NEW CONTACT NAME AND MOVE ON] [IF NEEDED] This is not a sales call. [IF NEEDED] This is a fact-finding survey only, and responses will not be connected with your firm in any way. The California Public Utilities Commission wants to better understand how businesses think about and manage their energy consumption.

77	There is no one here who can help you	T&T
1	Continue Q1B until you find appropriate contact person, record as &NEW CONTACT NAME	Intro3:s

Intro3:S

[IF BEST CONTACT IS AVAILABLE]
Hello, my name is _____%n_____ and I am calling on behalf of the California Public Utilities Commission from Itron Consulting. THIS IS NOT A SALES CALL. We are interested in speaking with the person most knowledgeable about your organization's participation in ... <%UTILITY>'s <%PROGRAM> program...I was told that would be you.
...Your organization participated in <%UTILITY>'s <%PROGRAM> by installing lighting equipment around 2013 or 2014.
Through this program, your oganization installed....
<%CUSTOM_MEASURE>
<%QTY_1> ... <%UNITS_1> ... <%MEASURE_1>
<%QTY_2> ... <%UNITS_2> ... <%MEASURE_2>
<%QTY_3> ... <%UNITS_3> ... <%MEASURE_3>
Are you the best person to speak to about your organization's participation in this program?

1	Yes	Person:s
2	No, there is someone else	Intro3:s
3	No and I don't know who to refer you to	Appoint
5	Property management company handles this	PMNAME
99	Don't know/refused	T&T

Ext

Is there a phone extension or phone number you recommend we use when we call back?

77	Record Extension or Phone Number, &PHONE	Thank&Terminate
88	Refused	Thank&Terminate
99	Don't know	Thank&Terminate

PMNAME

May I have the name and contact information of your property management company?

1	Yes - RECORD	Record Response and T&T
2	No	Thank&Terminate
88	Refused	Thank&Terminate
99	Don't Know	Thank&Terminate

Appoint	[IF RECOMMENDED CONTACT IS NOT CURRENTLY AVAILABLE] When would be a good day and time for us to call back?	
77	Record day of the week, time of day and date to call back, as &APPOINT	Record Response and T&T
88	Refused	Intro3(99)
99	Don't know	Intro3(99)

If Person(3)

Intro3(99)	Thank you for your time. We need to speak with the person at your organization that is most familiar with this facility's energy using equipment. Those are all of the questions I have for you today.	Abandoned User30

PBLOCK Hi	Who would be the person at this location who is most knowledgeable about this facility's energy using equipment? [Enter New Contact Name and move on.]	
77	Record Name, as &CONTACT	May_I
88	Refused	Thank&Terminate
99	Don't know	Intro3(99)

May_I	May I speak with him/her?	
77	Yes	Intro3:s
88	No (not available right now@, set cb)	Abandoned Appointment

PERSON:s	According to our records, your organization participated in <%UTILITY>'s <%PROGRAM> program by installing energy saving equipment around ... <%DEEM_PAID_DATE1> <%CUST_PAID_DATE> Through this program, your organization installed.... <%CUSTOM_MEASURE> <%QTY_1> ... <%UNITS_1> ... <%MEASURE_1> <%QTY_2> ... <%UNITS_2> ... <%MEASURE_2> <%QTY_3> ... <%UNITS_3> ... <%MEASURE_3> Are you the person most knowledgeable about your organization's participation in ...<%UTILITY>'s <%PROGRAM> Program?	
1	Yes	Continue
2	Yes, need to make appointment	Appoint
4	No, but I will give you a name	Thank&Terminate
99	No one knows about the energy using equipment	Thank&Terminate

DISPLAY	If you need to provide validation for this survey, provide the following contact name and number: Mona Dzvova (LAST NAME PRONOUNCED 'ZOVA'), (415) 703-1231, and the following website: **www.cpuc.ca.gov/eevalidation** Before we start, I would like to inform you that for quality control purposes, this call may be monitored by my supervisor.Today we're conducting a very important study on the energy needs and perceptions of organizations like yours. We are interested in how organizations like yours think about and manage their energy consumption.Your input will allow the California Public Utilities Commission to build and maintain better energy savings programs for customers like you. And we would like to remind you, your responses will not be connected with your organization in any way.

SCREENER

VERIFY For verification purposes only, may I please have your name?

77	Get name	Scrn_Addr
88	Refused	Scrn_Addr
99	Don't know	Scrn_Addr

DISPLAY For the sake of expediency, I will refer to ....<%UTILITY>'s <%PROGRAM> ...program as the PROGRAM.

Scrn_Addr First, I'd like to ask you a few questions about your organization and facility. Our records show your organization is located at %ADDRESS in %CITY. Is that correct?
[CONTINUE IF ADDRESS REPORTED BY RESPONDENT IS SIMILAR ENOUGH]

1	Yes	Bus_Name
2	No	CORRECT
88	Refused	COMMENT
99	Don't Know	COMMENT

COMMENT We were attempting to reach <%UTILITY>'s customer at <%ADDRESS> and since you cannot confirm this address, those are all the questions that we have for you today, on behalf of the California Public Utilities Commission, thank you for your time.

CORRECT May I have your correct address?

%CORRECT	Corrected Address	COMPARE

COMPARE	Are these addresses similar or totally different? Computer Address - %ADDRESS Corrected Address - &CORRECT	
1	Similar	Bus_Name
2	Totally Different	COMMENT2

COMMENT2	We were attempting to reach the <%UTILITY> customer at <%ADDRESS> in <%CITY> and since that does not match your address, then we must have mis-dialed the telephone number. Those are all the questions that we have for you today, on behalf of the California Public Utilities Commission. Thank you for your time and cooperation.	Thank and Terminate

BUS_NAME	Our records show your organization's name as: <%BUSINESS> <%CONTACT> <%OLDCONTACT>. Is that correct?	
1	Yes	INCENT
2	No	Bus_Correct
88	Refused	COMMENT
99	Don't Know	COMMENT

BUS_CORRECT	What is the correct name for your organization?	
&BUS_CORRECT	Corrected Business	INCENT

INCENT	What percentage of the cost of your rebated equipment was covered by the program?	
77	RECORD RESPONSE	A1gg
88	REFUSED	FM050
99	DON'T KNOW	FM050

IF INCENT <> 100 then ask; Else skip to FM050

A1gg	What incentive amount did your organization receive from the program towards your energy efficient equipment installation?	
77	RECORD VERBATIM	FM050
88	Refused	FM050
99	Don't know	FM050

FM050	What is the main business ACTIVITY at this facility? [DO NOT READ]	
1	Offices (non-medical)	FM050a
2	Restaurant/Food Service	FM050b
3	Food Store (grocery/liquor/convenience)	FM050c
4	Agricultural (farms, greenhouses)	FM050d
5	Retail Stores	FM050e
6	Warehouse	FM050f
7	Health Care	FM050g
8	Education	FM050h
9	Lodging (hotel/rooms)	FM050i
10	Public Assembly (church, fitness, theatre, library, museum, convention)	FM050j
11	Services (hair, nail, massage, spa, gas, repair)	FM050k
12	Industrial (food processing plant, manufacturing)	FM050l
13	Laundry (Coin Operated, Commercial Laundry Facility, Dry Cleaner)	FM050m
14	Condo Assoc./Apartment Mgr (Garden Style, Mobile Home Park, High-rise, Townhouse)	FM050n
15	Public Service (fire/police/postal/military)	FM050o
77	OPEN\Record Other Service Shop	LANG
88	Refused	LANG
99	Don't know	LANG

FM050a	Which of the following types of offices best describes this facility? Would you say...[READ]	
1	Administration and management	LANG
2	Financial/Legal	LANG
3	Insurance/Real Estate	LANG
4	Data Processing/Computer Center	LANG
5	Mixed-Use/Multi-tenant	LANG
6	Lab/R&D Facility	LANG
7	Software Development	LANG
8	Government Services	LANG
9	Office with Warehouse	LANG
10	Contractor's Offices	LANG
11	Telecommunications Center (call center)	LANG
12	Travel Services (Travel Agent)	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050b	Which of the following types of restaurants or food service best describes this facility? Would you say… [READ]	
1	Fast Food or Self Service	LANG
2	Specialty/Novelty Food Service	LANG
3	Table Service	LANG
4	Bar/Tavern/Nightclub/Brew Pub or Microbrewery/Other entertainment	LANG
5	Caterer	LANG
6	Other Food Service	LANG
88	Refused	LANG
99	Don't know	LANG

FM050c	Which of the following types of food stores best describes this facility? Would you say...[READ]	
1	Supermarkets	LANG
2	Small General Grocery	LANG
3	Specialty/Ethnic Grocery/Deli	LANG
4	Convenience Store	LANG
5	Liquor Store	LANG
6	Retail Bakery	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050d	What type of agricultural facility is this? [READ]	
1	Commercial Greenhouse	LANG
2	Commercial Farm	LANG
3	Dairy/Ranch	LANG
4	Vineyard/Orchard	LANG
5	Agricultural Storage (Grain Elevators, etc.)	LANG
6	Equine Facility (Horse Boarding/Grooming/Racing/Breeding)	LANG
77	OPEN\Describe type of agricultural facility	LANG
88	Refused	LANG
99	Don't know	LANG

FM050e	Which of the following types of retail stores best describes this facility? Would you say… [READ]	
1	Department/Variety Store	LANG
2	Retail Warehouse/Club	LANG
3	Shop in Enclosed Mall	LANG
4	Shop in Strip Mall	LANG
5	Auto/Truck/Motorcycle Sales	LANG
6	Art Gallery	LANG
7	Auction House	LANG
8	Heavy Equipment Sales	LANG
9	Facility is a Mall/Strip Mall	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050f	Which of the following types of warehouses best describes this facility? Would you say… [READ]	
1	Refrigerated Warehouse	LANG
2	Unconditioned Warehouse, High Bay (lighting higher than 13 ft.)	LANG
3	Unconditioned Warehouse, Low Bay	LANG
4	Conditioned Warehouse, High Bay (lighting higher than 13 ft.)	LANG
5	Conditioned Warehouse, Low Bay	LANG
6	Shipping/Distribution Center	LANG
7	Garage/Parking/Storage for Commercial Fleet	LANG
8	Public Self Storage Facility	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050g	Which of the following types of health care centers best describes this facility? Would you say… [READ]	
1	Hospital	LANG
2	Nursing Home	LANG
3	Medical/Dental Office	LANG
4	Clinic/Outpatient Care	LANG
5	Medical/Dental Lab	LANG
6	Alcohol/Drug Treatment/Rehabilitation	LANG
7	Doctor's Office	LANG
8	Dentist's Office	LANG
9	Veterinary Hospital/Clinic	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050h	Which of the following types of educational centers best describes this facility? Would you say… [READ]	
1	Daycare or Preschool	LANG
2	Elementary School	LANG
3	Middle/Secondary School	LANG
4	College or University	LANG
5	Vocational or Trade School	LANG
6	Instructional Studio (Dance/Music/Martial Arts)	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050i	Which of the following types of lodging best describes this facility? Would you say… [READ]	
1	Hotel	LANG
2	Motel	LANG
3	Resort	LANG
4	Bed and Breakfast	LANG
5	Campground/Trailer Camping/KOA	LANG
6	Residential Hotel/Motel	LANG
7	Dormitory/Sorority/Fraternity	LANG
8	Activity Camp/Summer Camp	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050j	Which of the following types of public assembly buildings best describes this facility? Would you say… [READ]	
1	Religious Assembly (worship only)	LANG
2	Religious Assembly (mixed use)	LANG
3	Health/Fitness Center/Athletic Center/Gym	LANG
4	Movie Theaters	LANG
5	Theater/Performing Arts Venue	LANG
6	Library/Museum	LANG
7	Conference/Convention Center	LANG
8	Community Center/Activity Center	LANG
9	Country Club	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050k	Which of the following types of service buildings best describes this facility? Would you say...[READ]	
1	Hair Salon	LANG
2	Nail Salon	LANG
3	Massage Spa	LANG
4	Day Spa	LANG
5	Gas Station/Auto Repair	LANG
6	Gas Station w/Convenience Store	LANG
7	Repair (Non-Auto)	LANG
8	Copy Center/Printing	LANG
9	Package Delivery (Fed Ex/UPS/DHL)	LANG
10	HVAC Repair Installation	LANG
11	Aircraft Maintenance/Repair	LANG
12	Airport	LANG
13	Parking Lot/Commuter Service	LANG
14	Marina	LANG
15	Amusement (mini-golf/go-carts/skating/bowling)	LANG
16	Pet Care/Grooming	LANG
17	Car Rental	LANG
18	Car Wash	LANG
19	Cemetery/Mortuary/Crematorium	LANG
20	Equipment Rental	LANG
21	Fleet Fueling Services	LANG
22	Pest Control	LANG
23	Photographer	LANG
24	Vehicle Inspections	LANG
25	Transportation	LANG

26	Upholstery	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050l Which of the following types of buildings best describes this facility? Would you say...[READ]

1	Assembly/Light Manufacturing	LANG
2	Food Processing Plant	LANG
3	Recycling Center	LANG
4	Commercial/Industrial Bakery	LANG
5	Commercial Brewery/Winery	LANG
6	Chemical/Petrochemical Production	LANG
7	Industrial Process	LANG
8	Radio/Television/Film/Music Production	LANG
9	Energy Generation/Distribution	LANG
10	Machine Shop	LANG
11	Pharmaceutical Production/Manufacturing	LANG
12	Mail Sorting	LANG
13	Mining	LANG
77	OPEN\DO NOT USE unless necessary	LANG
88	Refused	LANG
99	Don't know	LANG

FM050m What type of laundry facility is this? [READ]

1	Coin Operated	LANG
2	Commercial Laundry Facility	LANG
3	Dry Cleaners	LANG
77	OPEN\Record other building type	LANG
88	Refused	LANG
99	Don't know	LANG

FM050n Which of the following types of buildings best describes this facility? Would you say...[READ]

1	Garden Style	LANG
2	Mobile Home	LANG
3	High-rise	LANG
4	Townhouse	LANG
5	Condominium	LANG
6	Apartment	LANG
7	Artists' Studio/Live Work/Loft	LANG

8	Assisted Living	LANG
77	OPEN\Record other building type	LANG
88	Refused	LANG
99	Don't know	LANG

FM050o Which of the following types of buildings best describes this facility? Would you say...[READ]

1	Police station	LANG
2	Fire station	LANG
3	Post office	LANG
4	Military	LANG
5	Ambulance Service	LANG
6	Jail/Correctional facility	LANG
7	Courthouse	LANG
8	Library	LANG
9	Water/Waste Water Treatment	LANG
10	General Government (Municipal/State/Federal Agency Buildings)	LANG
11	Public Park	LANG
77	OPEN\Record other building type	LANG
88	Refused	LANG
99	Don't know	LANG

LANG Is another language besides English used to conduct business at this facility?

1	Yes	OTH_LANG
2	No	CC2a
88	Refused	CC2a
99	Don't Know	CC2a

OTH_LANG Which languages are used to conduct business at this facility?

1	Spanish	CC2a
2	Chinese	CC2a
3	Korean	CC2a
4	Vietnamese	CC2a
5	Japanese	CC2a
6	Hindi	CC2a
77	OPEN	CC2a
88	Refused	CC2a
99	Don't know	CC2a

CUSTOMER CHARACTERISTICS

Now, I'd like to ask you questions regarding your facility.

CC2a What is the total square footage at this facility?

77	RECORD Square feet	CC2c
888888	Refused	CC3
999999	Don't know	CC3

IF CC2a IN (88, 99)

CC3 Would you say that the floor area is ...?

1	less than 1,500 sq. ft.	CC2c
2	1,500 - 5,000 sq. ft.	CC2c
3	5,000 - 10,000 sq. ft.	CC2c
4	10,000 – 25,000 sq. ft.	CC2c
5	25,000 – 50,000 sq. ft.	CC2c
6	50,000 – 75,000 sq. ft.	CC2c
7	75,000 – 100,000 sq. ft.	CC2c
8	over 100,000 sq. ft. (ag area)	CC2c
88	Refused	CC2c
99	Don't know	CC2c

CC2c Is the entire floor area of this facility heated or cooled?

1	Yes	CC3a
2	No	CC2d
88	Refused	C0
99	Don't know	C0

CC2d What percentage of the floor area is heated or cooled?

77	Percent	CC3a
101	Refused	C0
102	Don't know	C0

If CC2d > 0 or CC2c = 1; else skip to C0

CC3a Is your space heated using electricity or gas or something else?

1	Electricity	C0
2	Gas	C0
3	Both electricity and gas	C0
4	Propane	C0
77	OPEN\Other-record	C0
88	Refused	C0
99	Don't know	C0

C0	About what percentage of your operating costs does energy account for?	
1	Less than 1 percent	CC4
2	1-2 percent	CC4
3	3-5 percent	CC4
4	6-10 percent	CC4
5	11-15 percent	CC4
6	16-20 percent	CC4
7	21-50 percent	CC4
8	Over 51 percent	CC4
88	Refused	CC4
99	Don't Know	CC4

CC4	Does your organization own, lease, or manage the facility?	
1	Own	C5
2	Lease/Rent	C5
3	Manage	C5
88	Refused	C5
99	Don't know	C5

C5	How many locations does your organization have. Is it....	
1	This facility only	CC6
2	2 to 4 locations	CC6
3	5 to 10 locations	CC6
4	11 to 25 locations	CC6
5	more than 25 locations	CC6
88	Don't know	CC6
99	Refused	CC6

CC6	How active a role does your organization take in making purchase decisions related to energy using equipment at this facility? Would you say you are…	
1	Very active – involved in all phases and have veto power	CC8
2	Somewhat active – we approve decisions and provide some input and review	CC8
3	Slightly active – we have a voice but it's not the dominant voice	CC8
4	Not active at all – we're part of a larger firm	CC8
5	Not active at all – our firm doesn't get involved in these issues	CC8
88	Refused	CC8
99	Don't know	CC8

CC8	In what year was the facility built?	
7777	Year	CC11
8888	Refused	CC10
9999	Don't know	CC10

If CC8 in (88, 99) then ask; else skip to CC11

CC10	If don't know, would you say it was…	
1	After 2010	CC11
2	2000s	CC11
3	1990s	CC11
4	1980s	CC11
5	1970s	CC11
6	1960s	CC11
7	1950	CC11
8	Before 1950	CC11
88	Refused	CC11
99	Don't know	CC11

CC11	In what year was this facility last remodeled? [PROBE FOR BEST GUESS]	
7777	Year	CC12a
6666	Never Remodeled	CC12a
8888	Refused	CC11a
9999	Don't know	CC11a

Ask if CC11 in (88, 99); else skip to CC12a

CC11a	Would you say the last remodeling was done …. [READ RESPONSES.]	
1	Between 2010 and present	CC12a
2	Between 2006 and end of 2009	CC12a
3	Between 2000 and the end of 2005	CC12a
4	During the 1990s	CC12a
5	Before the 1990s	CC12a
88	Refused	CC12a
99	Don't know	CC12a

CC12a	In what year was this organization established at this location?	
7777	Year	BC090
8888	Refused	CC12b
9999	Don't know	CC12b

If CC12a in (88, 99) then ask; else skip to BC090

CC12b	Would you say it was…	
1	After 2010	BC090
2	Between 2006 and 2010	BC090
3	Between 2000 and 2005	BC090
4	In the 1990s	BC090
5	In the 1980s	BC090
6	In the 1970s	BC090
7	In the 1960s or	BC090
8	Before 1960	BC090
88	Don't know	BC090
99	Refused	BC090

ADDITIONAL FACILITY CHARACTERISTICS

BC090	Has the square footage of the facility increased, decreased or remained the same since January 2012?	
1	Increase in square footage	BC100
2	Decrease in square footage	BC110
3	Stayed the same	CA15
88	Refused	CA15
99	Don't know	CA15

If BC090 = 1 then ask; else skip to BC110

BC100	How many square feet were added?	
77	Square feet	BC120
88	Refused	BC120
99	Don't know	BC120

If BC090 = 2 then ask; else skip to BC120

BC110	By how many square feet was the facility reduced?	
77	Square feet	BC120
88	Refused	BC120
99	Don't know	BC120

If BC090 in (1, 2) then ask; else skip to CA15

BC120	In what year did this <%BC090> occur?	
1	2012	V1
2	2013	V1
3	2014	V1
88	Refused	V1
99	Don't know	V1

ROLE OF CONTRACTORS

Did you use a contractor/vendor to install any of the the energy efficient measures that were purchased through the program?

V1		
1	Yes	V2
2	No	AP9
88	Refused	AP9
99	Don't Know	AP9

If V1 = 1 then ask; else skip to AP9

How did you come into contact with the contractor/vendor?

V2		
1	They contacted you	V2b
2	You contacted them	V3
3	You had worked with them before	V2a
77	OTHER - Record	V3
88	Refused	V3
99	Don't Know	V3

Ask if V2 = 3; else skip to V2b

In relation to this project, did the vendor/contractor approach you about your energy efficient equipment retrofit/installation?

V2a		
1	Yes	V2b
2	No	V3
88	Refused	V3
99	Don't Know	V3

Ask if V2 = 1 or V2a = 1; else skip to V3

On a scale of 0 - 10, with 0 being NOT AT ALL LIKELY and 10 is VERY LIKELY, how likely is it that your organization would have installed this new equipment had the contractor/vendor not contacted you?

V2b		
1	0-10 response	V3
88	Refused	V3
99	Don't Know	V3

Did the contractor/vendor tell you about or recommend the program?

V3		
1	Yes	V4
2	No	AP9
88	Refused	AP9
99	Don't Know	AP9

Ask if V3 = 1; else skip to AP9

Prior to coming into contact with the contractor/vendor, did your organization have plans to replace/install this equipment?

V4		
1	Yes	V4a
2	No	V4a
88	Refused	V4a
99	Don't Know	V4a

Using the same scale of 0 - 10 as before, how likely is it that your organization would have installed the new energy efficient equipment had the contractor/vendor not recommended it?

V4a		
1	0-10 response	V4b
88	Refused	V4b
99	Don't Know	V4b

Using the same scale, how likely is it that your organization would have installed the energy efficient equipment with the same level of efficiency if the contractor/vendor had not recommended to do so?

V4b		
1	0-10 response	V40
88	Refused	V40
99	Don't Know	V40

On a scale of 0 - 10, with 0 being not at all important and 10 being very important, how important was the input from the contractor you worked with in deciding which specific equipment to install?

V40		
1	0-10 response	AP9
88	Refused	AP9
99	Don't Know	AP9

PROGRAM AWARENESS

Next, I'd like to ask you about various energy efficiency programs and what influenced your program participation.

How did you FIRST learn about <%UTILITY>'s program?

AP9	[DO NOT READ ANSWERS]	
1	Bill insert	AP9a
2	Program literature	AP9a
3	Account representative	AP9a
4	Program approved vendor	AP9a
5	Program representative	AP9a
6	Utility or program website	AP9a
7	Trade publication	AP9a
8	Conference	AP9a
9	Newspaper article	AP9a
10	Word of mouth	AP9a
11	Previous experience with it	AP9a
12	Company used it at other locations	AP9a
13	Contractor	AP9a
14	Result of an audit	AP9a
15	Part of a larger expansion or remodeling effort	AP9a
77	Other (RECORD VERBATIM)	AP9a
88	Refused	A1b
99	Don't know	A1b

If AP9 in (1-77) then ask; else skip to A1b

How ELSE did you learn about <%UTILITY>'s program?

AP9a	[DO NOT READ LIST, ACCEPT MULTIPLES]	
1	Bill insert	N33
2	Program literature	N33
3	Account representative	N33
4	Program approved vendor	N33
5	Program representative	N33
6	Utility or program website	N33
7	Trade publication	N33
8	Conference	N33
9	Newspaper article	N33
10	Word of mouth	N33
11	Previous experience with it	N33
12	Company used it at other locations	N33
13	Contractor	N33
14	Result of an audit	N33
15	Part of a larger expansion or remodeling effort	N33
77	Other (RECORD VERBATIM)	N33
88	Refused	N33
99	Don't know	N33

If AP9 = 3 or AP9A = 3 then ask; else skip to A1b

You mentioned that you have a Utility or Program Administrator Account Rep.
Can you give me his or her name?
!!___Do you have his/her email address?
!___Do you have a phone number for him/her?
!___Do you have a cell phone number for him/her?\,

N33

77	RECORD NAME, Phone, Email, etc.	A1b
88	Refused	A1b
99	Don't know	A1b

INTEGRATED DEMAND SIDE MANAGEMENT

If AUDIT = 1 then ask; else skip to ID0

According to our records, your organization also received an AUDIT from <%UTILITY>. Is this correct?

A1b

1	Yes	ID0
2	No	ID0
88	Refused	ID0
99	Don't know	ID0

If AUDIT <> 1

To the best of your knowledge, has the facility located at this address received a <%UTILITY>-sponsored energy audit within the past 3 years?

ID0

1	Yes	ID1
2	No	ID1
88	Refused	ID1
99	Don't Know	ID1

Are you aware of other programs, other than the one we mentioned earlier, or resources that are designed to help organizations like yours reduce its energy bills?

ID1

1	Yes	ID2
2	No	ID3
88	Refused	ID3
99	Don't Know	ID3

If ID1 = 1 then ask; else skip to ID3

ID2	What types of programs can you recall? **[RECORD ALL MENTIONS]** [After each response prompt with "Can you recall any others?"]	
1	Rebates/incentives (include mentions of SPC and Express)	ID3
2	Building Commissioning (Retrocommissioning, Monitoring based commissioning)	ID3
3	Business energy audits and feasibility studies	ID3
4	Energy Centers (Pacific Energy Center, SCE CTAC)	ID3
5	Seminars, classes, and workshops	ID3
6	Solar or other Distributed Generation Programs (CSI, SGIP)	ID3
7	Demand Response Programs (Flex Your Power, Peak Choice, BIP, DBP, Aggregator, PDP) ID3	ID3
8	Upstream HVAC and Motors Program	ID3
77	Other programs [SPECIFY:]_____	ID3
88	Refused	ID3
99	Don't Know	ID3

ID3	Has your Account Representative, or any Program Staff or Program Vendors discussed solar, wind or other self-generation equipment opportunities with you?	
1	Yes, Account Representative	ID3a
2	Yes, Program Staff	ID3a
3	Yes, Program Vendor	ID3a
4	No	ID3a
88	Refused	ID3a
99	Don't Know	ID3a

ID3a	Has your Account Representative, Program Staff, or Program Vendors discussed Demand Reduction programs, technologies, or opportunities with you? (Select all that apply)	
1	Yes, Account Representative	Program_Lighting
2	Yes, Program Staff	Program_Lighting
3	Yes, Program Vendor	Program_Lighting
4	No	Program_Lighting
88	Don't Know	Program_Lighting
99	Refused	Program_Lighting

PROGRAM LIGHTING EQUIPMENT

Ask if LIGHTING = 1; else skip to NEXT BATTERY

Comment	One way that organizations like yours can reduce their energy use is to install more energy efficient lighting equipment. I would like to ask you about the lighting changes you made as part of your participation in <%UTILITY>'s program.	LI99

CONTINUE IF CUSTOM = 1; ELSE SKIP TO A3A IF DEEMED = 1

LI99	Our records indicate that your organization installed CUSTOM LIGHTING EQUIPMENT through the program. It is described as <%CUSTOM_MEASURE>. Is this correct?	
1	Yes	LI100
2	No	DISPLAY
88	Refused	DISPLAY
99	Don't know	DISPLAY

Ask if LI99 in (2-99); else skip to LI100.

DISPLAY	We can not continue this study unless we can speak to someone at your organization that is familiar with the lighting equipment that was installed through the program.	A3A

Ask if LI99 = 1; else skip to A3A.

LI100	What types of fixtures, ballasts, or light controls were installed as part of this lighting installation?	<$2>
1	High performance T8 (1" diameter bulbs)	LI101A <$1>
2	T8 fluorescent fixtures (1” diameter bulbs)	LI101A <$1>
3	T10 fluorescent fixtures	LI101A <$1>
4	Compact HID (High Density Discharge) Fixtures	LI101A <$1>
5	Screw-in modular CFLs	LI101A <$1>
6	Hardwire CFL fixtures	LI101A <$1>

7	CFL Exit Signs	LI101A <$1>
8	Led Exit Signs	LI101A <$1>
9	Halogen bulbs	LI101A <$1>
10	Reflectors	LI101A <$1>
11	Electronic Ballasts	LI101A <$1>
12	Lighting Controls, Time Clock	LI101A <$1>
13	Lighting Controls, Occupancy Sensor	LI101A <$1>
14	Lighting Controls, Bypass/Delay Timers	LI101A <$1>
15	Lighting Controls, Photocell	LI101A <$1>
16	Other Fluorescent	LI101A <$1>
17	Skinny/Thin Tubes	LI101A <$1>
18	T5 Fixtures (5/8" diameter)	LI101A <$1>
19	Screw-in LEDs	LI101A <$1>
20	Screw-in LEDs Reflector Lamps	LI101A <$1>
21	LED Fixtures or Panels (e.g., replacement for linear fixtures)	LI101A <$1>
77	Other (PLEASE SPECIFY)	LI101A <$1>

IF CUSTOM = 1 START MACRO <LI99> FOR CUSTOM MEASURES (LI101A THROUGH LI101H)

LI101A ($1)	Approximately how many <$2> were installed through the program?	
77	Record #	LI101C <$4>
8888	Refused	LI101B <$3>
9999	Don't know	LI101B <$3>

If LI101A <$1> in (88, 99) the ask; else skip to LI101C <$4>

LI101B ($3)	Would you say that the number of <$2> installed under the program are…	
1	less than 10 units	LI101C <$4>
2	11 - 50 units	LI101C <$4>
3	50 - 100 units	LI101C <$4>
4	More than 100 units	LI101C <$4>
88	Refused	LI101C <$4>
99	Don't know	LI101C <$4>

LI101C ($4)	Were any of the program provided <$2> placed/installed at another facility? If so, what percentage would you estimate?	
1	Yes, #record percentage	LI101D <$5>

2	No	LI101D <$5>
101	Refused	LI101D <$5>
102	Don't know	LI101D <$5>

LI101D ($5)	What type of lighting equipment was removed and replaced when you installed <$2> through the program?	
1	High performance T8 (1" diameter bulbs)	LI101F <$7>
2	T8 fluorescent fixtures (1” diameter bulbs)	LI101F <$7>
3	T10 fluorescent fixtures	LI101F <$7>
4	T12 Fixtures (1.5” diameter bulbs)	LI101F <$7>
5	Compact HID (High Density Discharge) Fixtures	LI101E <$6>
6	Screw-in Modular CFLs	LI101F <$7>
7	Hardwire CFL Fixtures	LI101F <$7>
8	Incandescent bulbs	LI101F <$7>
9	CFL Exit Signs	LI101F <$7>
10	LED Exit Signs	LI101F <$7>
11	Halogen bulbs	LI101F <$7>
12	Reflectors	LI101F <$7>
13	Electronic Ballast	LI101F <$7>
14	Magnetic Ballast	LI101F <$7>
15	Manual Switches	LI101F <$7>
16	Lighting Controls, Time Clock	LI101F <$7>
17	Lighting Controls, Occupancy Sensor	LI101F <$7>
18	Lighting Controls, Bypass/Delay Timers	LI101F <$7>
19	Lighting Controls, Photocell	LI101F <$7>
20	Other Fluorescent	LI101F <$7>
21	Fat/Thick Tubes	LI101F <$7>
22	Skinny/Thin Tubes	LI101F <$7>
23	T5 Fixtures (5/8” diameter)	LI101F <$7>
24	Screw-in LEDs	LI101F <$7>
25	Screw-in LEDs Reflector Lamps	LI101F <$7>
26	LED Fixtures or Panels (e.g., replacement for linear fixtures)	LI101F <$7>
66	Did not replace anything - new equipment	LI90
77	Other (PLEASE SPECIFY)	LI101F <$7>

Ask if LI101D <$5> = 5; else skip to LI101F

LI101E ($6)	Were the HID lamps you removed High Pressure Sodium, Metal Halide, Mercury Vapor or Incandescent?	
1	High pressure sodium	LI101F <$7>
2	Metal Halide	LI101F <$7>
3	Mercury Vapor	LI101F <$7>
4	Incandescent	LI101F <$7>
88	Refused	LI101F <$7>
99	Don't know	LI101F <$7>

Ask if LI101D <$5> <> 66; else skip to LI90

LI101F ($7)	Approximately how old was the lighting that was removed and replaced with <$2>? Would you say...	
1	Less than 5 years old	LI101G <$8>
2	Between 5 and 10 years old	LI101G <$8>
3	Between 10 and 15 years old	LI101G <$8>
4	More than 15 years old	LI101G <$8>
88	Refused	LI101G <$8>
99	Don't know	LI101G <$8>

LI101G ($8)	How would you describe the removed equipment's condition? Would you say they were in…	
1	Poor condition	LI101H <$9>
2	Fair condition	LI101H <$9>
3	Good condition	LI101H <$9>
88	Refused	LI101H <$9>
99	Don’t know	LI101H <$9>

LI101H ($9)	Approximately what percentage of the lighting equipment that was removed and replaced was broken or not working prior to installing <$2>?	
%	Percent	LI90
101	Refused	LI90
102	Don't know	LI90

END MACRO FOR CUSTOM MEASURES; RESTART LOOP IF NEEDED FOR ADDITIONAL MEASURES SELECTED IN LI100; ELSE GO TO LI90

Ask if LI100 = 5

Of the CFLs you received through the program,what percentage do you estimate were placed into storage for later use?

LI90		
77	Open Record	LI901
101	Refused	LI901
102	Don't know	LI901

Ask if LI100 = 19

Of the LEDs you received through the program,what percentage do you estimate were placed into storage for later use?

LI901		
77	Open Record	LI902
101	Refused	LI902
102	Don't know	LI902

Ask only if LI100 = 20

Of the LED Reflector Lamps you received through the program,what percentage do you estimate were placed into storage for later use?

LI902		
77	Open Record	CUST_INSTALL_DATE_NU
101	Refused	CUST_INSTALL_DATE_NU
102	Don't know	CUST_INSTALL_DATE_NU

IF UNRECORDED <> CUST_INSTALL_DATE;

Our records indicate that your company installed this CUSTOM LIGHTING EQUIPMENT on <%CUST_INSTALL_DATE>. Is this correct?

CUST_INSTALL_ DATE_NU		
1	Yes	NTGCHECK
2	No	CUST_INSTALL_YEAR
88	Refused	CUST_INSTALL_YEAR
99	Don't know	CUST_INSTALL_YEAR

IF UNRECORDED(CUST_INSTALL_DATE) & ^UNRECORDED(CUST_PAID_DATE);

DISPLAY According to our records, your organization received a rebate for the installation of your CUSTOM LIGHTING

EQUIPMENT on ...
<%CUST_PAID_DATE>.

IF CUST_INSTALL_DATE_NU = 2 OR (UNRECORDED = CUST_INSTALL_DATE AND UNRECORDED <> CUST_PAID_DATE);

In what year did you install this CUSTOM LIGHTING EQUIPMENT (PROBE FOR BEST GUESS)

CUST_INSTALL_ YEAR

1	2013	CUST_INSTALL_MONTH
2	2014	CUST_INSTALL_MONTH
88	Refused	NTGCHECK
99	Don't know	NTGCHECK

If CUST_INSTALL_YEAR in (1-3) then ask; else skip to A3a

And in which Month. If you don't know the MONTH, could you remember the SEASON?

CUST_INSTALL_ MONTH

1	January	NTGCHECK
2	February	NTGCHECK
3	March	NTGCHECK
4	April	NTGCHECK
5	May	NTGCHECK
6	June	NTGCHECK
7	July	NTGCHECK
8	August	NTGCHECK
9	September	NTGCHECK
10	October	NTGCHECK
11	November	NTGCHECK
12	December	NTGCHECK
13	Fall	NTGCHECK
14	Winter	NTGCHECK
15	Spring	NTGCHECK
16	Summer	NTGCHECK
88	Refused	NTGCHECK
99	Don't know	NTGCHECK

NTGCHECK

GO TO NTG BATTERY IF NTGCUSTOM = 1; ELSE CONTINUE

IF DEEMED = 1 START LOOP FOR DEEMED MEASURES (<%LT_MEAS_x>, WHERE x = 1, 2, or 3); ELSE SKIP TO LI30

A3[A-C]	According to our records, your organization (MxDELAMP = 0) installed/delamped <%LT_QTY_x> <%LT_MEAS_x> through <%UTILITY>'s program, is this correct? [IF MxDELAMP == 1, READ: delamping occurs when you retrofit your T12s to T8s and reduce the number of lamps in a fixutre or simply reduce the number of fixtures]	
1	Yes - Quantity is Correct	DEEMED_INSTALL_DATE_NU
2	Yes - Installed Different Quanity	A3_QTY
3	No, did not install	DISPLAY
88	Refused	DISPLAY
99	Don't know	DISPLAY

DISPLAY	**IF A3[A-C](3 - 99), READ: "We must conduct this study with someone that knows about the installation of this measure." and ABANDON USER. Else continue with A3[A-C]_QTY**	

A3[A-C]_QTY	**Ask if A3[A-C] = 2 or LT_QTY_x = 0** Approximately how many units of <%LT_MEAS_x> were (MxDELAMP = 0) installed/delamped under the %PROGRAM program?	
77	Record #	DEEMED_INSTALL_DATE_NU
8888	Refused	A3_OTH
9999	Don't know	A3_OTH

A3[A-C]_OTH	**IF A3_QTY IN (88, 99)** Would you say that the number of <%LT_MEAS_x> (MxDELAMP = 0) installed/delamped are…	
1	less than 10 units	DEEMED_INSTALL_DATE_NU
2	11 - 50 units	DEEMED_INSTALL_DATE_NU
3	50 - 100 units	DEEMED_INSTALL_DATE_NU
4	More than 100 units	DEEMED_INSTALL_DATE_NU
88	Refused	DEEMED_INSTALL_DATE_NU
99	Don't know	DEEMED_INSTALL_DATE_NU

DEEM_INSTALL_DATEx_NU	**IF ^UNRECORDED(DEEM_INSTALL_DATEx)** Our records indicate that your organization <(MxDELAMP =	

	0)/installed/delamped> ...<%LT_MEAS_x> on <%DEEM_INSTALL_DATEx>. _____Is this correct?	
1	Yes	LI18
2	No	DEEM_INSTALL_YEAR
88	Refused	DEEM_INSTALL_YEAR
99	Don't know	DEEM_INSTALL_YEAR

	IF UNRECORDED(DEEM_INSTALL_DATEx) & ^UNRECORDED(DEEM_PAID_DATEx) According to our records, your organization received a rebate for the (MxDELAMP = 0) installation/delamping> of ...<%LT_MEAS_x>... on <%DEEM_PAID_DATEx>.	
DISPLAY		

	IF DEEM_INSTALL_DATEx_NU in (2,88,99) | (UNRECORDED(DEEM_INSTALL_DATEx) & ^UNRECORDED(DEEM_PAID_DATEx)) In what year did you (MxDELAMP = 0) install/delamp <%LT_MEAS_x>? (PROBE FOR BEST GUESS)	
DEEM_INSTALL_YEARx		
1	2013	DEEM_INSTALL_MONTHx
2	2014	DEEM_INSTALL_MONTHx
88	Refused	LI18
99	Don't know	LI18

	IF DEEM_INSTALL_YEARx in (1-3) And what month? {If they can not recall month, try to get the season.}	
DEEM_INSTALL_MONTHx		
1	January	LI18
2	February	LI18
3	March	LI18
4	April	LI18
5	May	LI18
6	June	LI18
7	July	LI18
8	August	LI18
9	September	LI18
10	October	LI18
11	November	LI18

12	December	LI18
13	Fall	LI18
14	Winter	LI18
15	Spring	LI18
16	Summer	LI18
88	Refused	LI18
99	Don't know	LI18

If A3[A-C] is 1 or 2;
Ask only if CFLx = 1; else skip to LI181[A-C]

LI18[A-C]	Of the CFLs you received through the program, what percentage do you estimate were placed into storage for later use?	
77	Open Record	LI181
101	Refused	LI181
102	Don't know	LI181

Ask only if LEDx = 1; else skip to LI182[A-C]

LI181[A-C]	Of the LEDs you received through the program,what percentage do you estimate were placed into storage for later use?	
77	Open Record	LI182
101	Refused	LI182
102	Don't know	LI182

ASK ONLY IF LEDRLx = 1

LI182[A-C]	Of the LED Reflector Lamps you received through the program,what percentage do you estimate were placed into storage for later use?	
77	Open Record	LI19
101	Refused	LI19
102	Don't know	LI19

LI19[A-C]	Were any of the program provided <%LT_MEAS_x> (MxDELAMP = 0) installed/delamped at another facility? If so, what percentage would you estimate?	
77	Yes, #record percentage	LI20
101	Refused	LI20

102	Don't know	LI20

IF MxDELAMP = 0; else skip to end of DEEMED MEASURE LOOP

LI20[A-C]	What type of lighting was removed and replaced when you installed <%LT_MEAS_x> through the program?	
1	High performance T8 (1" diameter bulbs)	LI22
2	T8 fluorescent fixtures (1" diameter bulbs)	LI22
3	T10 fluorescent fixtures	LI22
4	T12 Fixtures (1.5" diameter bulbs)	LI22
5	Compact HID (High Density Discharge) Fixtures	LI21
6	Screw-in Modular CFLs	LI22
7	Hardwire CFL Fixtures	LI22
8	Incandescent	LI22
9	CFL Exit Signs	LI22
10	LED Exit Signs	LI22
11	Halogen bulbs	LI22
12	Reflectors	LI22
13	Electronic Ballast	LI22
14	Magnetic Ballast	LI22
15	Manual Switches	LI22
16	Lighting Controls, Time Clock	LI22
17	Lighting Controls, Occupancy Sensor	LI22
18	Lighting Controls, Bypass/Delay Timers	LI22
19	Lighting Controls, Photocell	LI22
20	Other Fluorescent	LI22
21	Fat/Thick Tubes	LI22
22	Skinny/Thin Tubes	LI22
23	T5 Fixtures (5/8" diameter)	LI22
24	Screw-in LEDs	LI22
25	Screw-in LEDs Reflector Lamps	LI22
26	LED Fixtures or Panels (e.g., replacement for linear fixtures)	LI22
66	DID NOT REMOVE ANYTHING-ADDITIONAL EQUIP ONLY	NTGCHECK1
77	Other (PLEASE SPECIFY)	LI22

IF MxDELAMP = 0;
ASK IF LI20[A-C] = 5; else skip to LI22[A-C]

Were the HID lamps you removed High Pressure Sodium, Metal Halide, Mercury Vapor or Incandescent?

LI21[A-C]		
1	High pressure sodium	LI22
2	Metal Halide	LI22
3	Mercury Vapor	LI22
4	Incandescent	LI22
88	Refused	LI22
99	Don't know	LI22

If LI20[A-C]^= 66 then ask; else skip to end of DEEMED Loop

Approximately how old was the equipment that were removed and replaced? Would you say…

LI22[A-C]		
1	Less than 5 years old	LI23
2	Between 5 and 10 years old	LI23
3	Between 10 and 15 years old	LI23
4	More than 15 years old	LI23
88	Refused	LI23
99	Don't know	LI23

How would you describe the removed equipment's condition? Would you say they were in…

LI23[A-C]		
1	Poor condition	LI24
2	Fair condition	LI24
3	Good condition	LI24
88	Refused	LI24
99	Don't know	LI24

Approximately what percentage of the lighting equipment that was removed and replaced was broken or not working prior to installing <%LT_MEAS_x>?

LI24[A-C]		
%	Percent	NTGCHECK1
101	Refused	NTGCHECK1
102	Don't know	NTGCHECK1

NTGCHECK1

GO TO NTGBATTERY IF NTGDEEMED =1; ELSE RESTART LOOP IF NEEDED FOR <%LT_MEAS_x> WHERE x = 2, 3

AFTER ALL DEEMED MEASURES HAVE GONE THROUGH LOOP AND THE

NTGBATTERY HAS BEEN COMPLETED FOR A LIGHTING MEASURE, ASK LI30

ASK IF LIGHTING=1

Considering all of the lighting changes we just discussed, approximately what percentage of the facility's lighting was affected by those changes?

LI30		
%	Percent	HB1
101	Refused	HB1
102	Don't know	HB1

HIGH BAY AND DELAMPING

If LINEAR = 1 or LI100 in (1, 2, 3, 16, 17, 18, 77); else skip to HB1a

Thinking about all of the types of linear fluorescent bulbs that were installed through the program, what is the highest height, in feet, above the area they light? [IN FEET]

HB1		
1	Record number of feet	HB2
66	Did not install linear fluorescent lamps	HB1a
88	Refused	HB2
99	Don't know	HB2

IF HB1 < 13 then ask; else skip to HB3

Just to double check, was any of the linear fluorescent lighting installed through the program at a height of 13 or more feet above the area it is meant to light? This would qualify as HIGH BAY lighting.

HB2		
1	Yes	HB3
2	No	HB1a
88	Refused	HB1a
99	Don't know	HB1a

ASKI IF IF (HB1 >> 12 & HB1 <> 66 & HB1 <> 88 & HB1 <> 99) | HB2(1); else skip to HB1a

What is the main kind of linear fluorescent bulbs located at this height?

HB3		
1	T8s	HB1a
2	T5s	HB1a
77	OPEN\RECORD OTHER	HB1a

88	Refused	HB1a
99	Don't know	HB1a

Ask if NON_LINEAR = 1 or LI100 in (4, 5, 6, 9, 77); else skip to DEL1

HB1a Is any of the lighting installed through the program considered to be High Bay? (If needed, lighting higher than 13 ft)

1	Yes	HB2a
2	No	DEL1
88	Refused	DEL1
99	Don't know	DEL1

Ask if HB1a = 1 else skip to DEL1

HB2a What kind of High Bay Lighting is it?

1	HID (High-intensity discharge) High pressure sodium	DEL1
2	HID Metal halide	DEL1
3	HID Mercury Vapor	DEL1
4	HID - I don't know what type	DEL1
5	CFLs	DEL1
77	OPEN\RECORD OTHER	DEL1
88	Refused	DEL1
99	Don't know	DEL1

Ask if DELAMP = 1; else skip to DEL1a

DEL1 We also show that you delamped linear fluorescent fixtures. Is this correct? (If needed: delamping occurs when you retrofit your T12s to T8s and reduce the number of lamps in a fixture or simply reduce the number of fixtures.)

1	Yes	DEL2
2	No	Gas
88	Refused	Gas
99	Don't know	Gas

Ask if DELAMP ^= 1 and LINEAR = 1 and M1DELAMP ^= 1 and M2DELAMP ^= 1 and M3DELAMP ^= 1 OR LI100(1-3, 16-18, 77);

DEL1a As part of the lighting installation you had completed during your participation in program did you have any delamping done? (If needed: delamping occurs when you retrofit your T12s to T8s and

reduce the number of lamps in a fixture or simply reduce the number of fixtures.)

1	Yes	DEL2
2	No	Gas
88	Refused	Gas
99	Don't know	Gas

Ask if DEL1 = 1 or DEL1a = 1 or (M1DELAMP = 1 and A3A in (1, 2)) or (M2DELAMP = 1 and A3B in (1, 2)) or (M3DELAMP = 1 and A3C in (1, 2))

DEL2 There are a few different types of delamping that can take place. Today we will be asking about 3 types in partciular. One type of delamping occurs when fixtures are simply removed (removal only). Another type of delamping occurs when the fixtures themselves are removed and replaced with new fixtures containing less bulbs (remove and replace fixtures). The final type is where the current fixtures are retrofitted, not replaced, to accomodate less bulbs (reduce # of bulbs).
Have you had Removal only Delamping done within your facility since January 2012?

1	Yes	DEL2a
2	No	DEL3
88	Refused	DEL3
99	Don't know	DEL3

If DEL2 = 1 then ask; else skip to DEL3

DEL2a What percent of the original fixtures within the delamped area were removed?

77	Record percentage	DEL3
101	Refused	DEL3
102	Don't know	DEL3

DEL3 Have you had Remove and Replace delamping done within your facility since 2012? Remove and replace occurs when the fixutres themselves are removed and replaced with new fixtures containing less bulbs.

1	Yes	DEL3a
2	No	DEL4
88	Refused	DEL4
99	Don't know	DEL4

If DEL3 = 1 then ask; else skip to DEL4

DEL3a What type of fixtures were removed?

77	Open Record	DEL3b
88	Refused	DEL3b
99	Don't know	DEL3b

DEL3b What type of fixtures were installed?

77	Open Record	DEL3c
88	Refused	DEL3c
99	Don't know	DEL3c

DEL3c How many lamps per fixture were present prior to the delamping retrofit?[PROBE FOR BEST GUESS IF DON'T KNOW]

1	1	DEL3d
2	2	DEL3d
3	3	DEL3d
4	4	DEL3d
5	5	DEL3d
6	6	DEL3d
7	7	DEL3d
8	8	DEL3d
88	Refused	DEL3d
99	Don't know	DEL3d

DEL3d How many lamps per fixture are present now, after the delamping retrofit? [PROBE FOR BEST GUESS IF DON'T KNOW]

1	1	DEL3E
2	2	DEL3E
3	3	DEL3E
4	4	DEL3E
5	5	DEL3E
6	6	DEL3E
7	7	DEL3E
8	8	DEL3E

88	Refused	DEL4
99	Don't know	DEL4

DEL3E	Approximately how old were the fixtures that were removed and replaced as a result of this Remove and Replace delamping? Would you say…	
1	Less than 5 years old	LI23
2	Between 5 and 10 years old	LI23
3	Between 10 and 15 years old	LI23
4	More than 15 years old	LI23
88	Refused	LI23
99	Don't know	LI23

DEL3F	How would you describe the condition of the fixtures that were Removed and Replaced as a result of the remove and replace delamping? Would you say they were in…	
1	Poor condition	LI24
2	Fair condition, or	LI24
3	Good condition	LI24
88	Refused	LI24
99	Don’t know	LI24

DEL3G	Approximately what percentage of the fixtures that were removed and replaced were broken or not working prior to the Remove and Replace delamping?	
%	Percent	LI30
101	Refused	LI30
102	Don't know	LI30

DEL4	Have you had a delamping retrofit to reduce the number of lamps per fixture within your facility since 2012? This is where the current fixtures are retrofitted, not replaced, to accomodate less bulbs (reduce # of lamps).	
1	Yes	DEL4a
2	No	DEL5
88	Refused	DEL5
99	Don't know	DEL5

If DEL4 = 1 then ask; else skip to DEL5

DEL4a	How many lamps per fixture were present prior to the delamping retrofit?[PROBE FOR BEST GUESS IF DON'T KNOW]	
77	Open Record	DEL4b
88	Refused	DEL4b
99	Don't know	DEL4b

DEL4b	How many lamps per fixture are present now, after the delamping retrofit? [PROBE FOR BEST GUESS IF DON'T KNOW]	
77	Open Record	DEL5
88	Refused	DEL5
99	Don't know	DEL5

DEL5	Is the amount of lighting better, worse, or the same than before your delamping job?	
1	Better	Gas
2	Worse	DEL11
3	Same	Gas
88	Refused	DEL11
99	Don’t know	DEL11

If DEL5 in (2, 88, 99) then ask; else skip to G1

DEL11	Did you install additional lighting equipment to increase the amount of lighting in the delamped area(s)?	
1	Yes	Gas
2	No	Gas
88	Refused	Gas
99	Don’t know	Gas

NET TO GROSS

DISPLAY For the sake of expediency, during this next battery we will be referring to the ..... program as THE PROGRAM and we will be referring to the installation of ...<%NTGMEASURE>... as THE MEASURE.

A3 There are usually a number of reasons why an organization like yours decides to participate in energy efficiency programs like this one. In your own words, can you tell me why you decided to participate in this program?

1	To replace old or outdated equipment	N2
2	As part of a planned remodeling, build-out, or expansion	N2
3	To gain more control over how the equipment was used	N2
4	Maintenance downtime/associated expenses for old equip were too high	N2
5	Had process problems and were seeking a solution	N2
6	To improve equipment performance	N2
7	To improve production as a result of the change in equipment	N2
8	To comply with codes set by regulatory agencies	N2
9	To improve visibility/plant safety	N2
10	To comply with company policies regarding regular equipment retrofits or remodeling	N2
11	To get a rebate from the program	N2
12	To protect the environment	N2
13	To reduce energy costs	N2
14	To reduce energy use/power outages	N2
15	To update to the latest technology	N2
16	To improve the comfort level of the facility	N2
77	RECORD VERBATIM	N2
88	Don't know	N2
99	Refused	N2

N2 Did your organization make the decision to install this new equipment before or after you became aware of rebates/cost reduction available through the PROGRAM?

1	Before	N3a
2	After	N3a
88	Refused	N3a
99	Don't know	N3a

DISPLAY Next, I'm going to ask you to rate the importance of the program as well as other factors that might have influenced your decision to install this equipment through the program. Using a scale of 0 to 10 where 0 means not

at all important and 10 means extremely important, how would you rate the importance of...

N3a	The age or condition of the old equipment	
#	Record 0 to 10 score (_____)	N3aa
88	Refused	N3b
99	Don't know	N3b

IF N3a > 5 and NTG_TYPE >= 2 THEN ASK

N3aa	How, specifically, did this enter into your decision to install/delamp this equipment?	
77	RECORD VERBATIM	N3b
88	Don't know	N3b
99	Refused	N3b

N3b	Availability of the PROGRAM rebate/cost reduction	
#	Record 0 to 10 score (_____)	N3bb
88	Refused	N3c
99	Don't know	N3c

IF N3b > 7 AND NTG_TYPE >= 2, THEN ASK

N3bb	Why do you give it this rating?	
77	Record VERBATIM	N3c
88	Refused	N3c
99	Don't know	N3c

IF A1B(1)|ID0(1) THEN ASK; ELSE SKIP TO N3d

N3c	Please rate the degree of importance of information provided through...A1B(1)|<ID0(1)/The Facility or System AUDIT/>	
#	Record 0 to 10 score (_____)	N3cc
88	Refused	N3d
99	Don't know	N3d

IF N3c > 7 and NTG_TYPE >= 2, THEN ASK

N3cc	Why do you give it this rating?	
77	Record VERBATIM	N3d
88	Refused	N3d
99	Don't know	N3d

If V1 = 1 THEN ASK; ELSE SKIP TO N3e

N3d	Recommendation from an equipment vendor that sold you the equipment and/or installed it for you **[VENDOR_1]**	
#	Record 0 to 10 score (_____)	N3e

88	Refused	N3e
99	Don't know	N3e

N3e Your previous experience with energy efficient projects?

#	Record 0 to 10 score (_____)	N3f
88	Refused	N3f
99	Don't know	N3f

N3f Your previous experience with <%UTILITY>'s program or a similar utility program?

#	Record 0 to 10 score (_____)	N3g
88	Don't know	N3g
99	Refused	N3g

NTG_TYPE >= 3 THEN ASK, ELSE N3h

N3g Information from the Program, Utility, or Program Administrator training course?

#	Record 0 to 10 score (_____)	N3gg
88	Refused	N3h
99	Don't know	N3h

IF N3g > 5, THEN ASK

N3gg What type of information was provided during the training?

77	Record VERBATIM	N3ggg
88	Refused	N3h
99	Don't know	N3h

N3ggg How, specifically, did this enter into your decision to install/delamp this equipment?

77	RECORD VERBATIM	N3h
88	Don't know	N3h
99	Refused	N3h

N3h Information from the Program, Utility, or Program Administrator Marketing materials?

#	Record 0 to 10 score (_____)	N3hh
88	Refused	N3j
99	Don't know	N3j

IF N3h > 5 and NTG_TYPE >= 2, THEN ASK

N3hh What type of information was provided that pertained to the PROJECT?

77	Record VERBATIM	N3hhh

88	Refused	N3j
99	Don't know	N3j

IF N3hh = 77, THEN ASK

N3hhh How, specifically, did this enter into your decision to install/delamp this energy efficient equipment?

77	RECORD VERBATIM	N3j
88	Don't know	N3j
99	Refused	N3j

IF NTG_TYPE >= 2

N3j Standard practice in your business/industry

#	Record 0 to 10 score (_____)	N3k
88	Refused	N3k
99	Don't know	N3k

If AP9 = 3 or AP9a = 3 THEN ASK; ELSE SKIP TO N3m

N3l Endorsement or recommendation by your account rep?

#	Record 0 to 10 score (_____)	N3ll
88	Refused	N3m
99	Don't know	N3m

IF N3l > 5 & NTG_TYPE >= 2 THEN ASK

N3ll What did they recommend?

77	Record VERBATIM	N3lll
88	Refused	N3m
99	Don't know	N3m

IF N3LL(77)

N3lll How specifically did this enter into your decision to install this project using energy efficient equipment?

77	RECORD VERBATIM	N3m
88	Don't know	N3m
99	Refused	N3m

IF NTG_TYPE >= 2, ASK

N3m Corporate policy or guidelines

#	Record 0 to 10 score (_____)	N3mm
88	Refused	N3n
99	Don't know	N3n

IF N3m > 5, THEN ASK

N3mm How, specifically, did this enter into your decision to install/delamp this equipment?

77	RECORD VERBATIM	N3n
88	Don't know	N3n
99	Refused	N3n

N3n Payback or return on investment of installing this equipment

#	Record 0 to 10 score (_____)	N3o
88	Refused	N3o
99	Don't know	N3o

N3o Improved product quality

#	Record 0 to 10 score (_____)	N3oo
88	Refused	N3p
99	Don't know	N3p

IF N3o > 5, THEN ASK

N3oo How, specifically, did this enter into your decision to install/delamp this equipment?

77	RECORD VERBATIM	N3p
88	Don't know	N3p
99	Refused	N3p

IF FM050 = 12 AND NTG_TYPE = 4, THEN ASK, ELSE SKIP TO N3r

N3p Compliance with state or federal regulations such as Title 24, air quality, OSHA, or FDA regulations

#	Record 0 to 10 score (_____)	N3pp
88	Refused	N3r
99	Don't know	N3r

IF N3p > 5, THEN ASK

N3pp How, specifically, did this enter into your decision to upgrade to energy efficient equipment?

77	RECORD VERBATIM	N3r
88	Don't know	N3r
99	Refused	N3r

ASK IF NTG_TYPE >= 3

N3r Compliance with your organization's normal remodeling or equipment replacement practices?

#	Record 0 to 10 score (_____)	N3rrr
88	Refused	N3s
99	Don't know	N3s

IF A3(2|10)&N3R(6||10);

What is your normal cycle in number of years for which you typically retrofit your equipment to comply with your organization@'s normal remodeling or equipment replacement practices?

N3RRR

# yrs	Record Number of Years	N3rr
88	Refused	N3rr
99	Don't know	N3rr

IF N3r > 5, THEN ASK

How, specifically, did this enter into your decision to install/delamp this equipment?

N3rr

77	RECORD VERBATIM	N3s.
88	Don't know	N3s.
99	Refused	N3s.

Were there any other factors we haven't discussed that were influential in your decision to install/delamp this MEASURE?

N3s

1	Nothing else influential	CC1
77	Record verbatim	N3ss
88	Refused	CC1
99	Don't know	CC1

ASK IF N3s = 77

Using the same zero to 10 scale, how would you rate the influence of this factor?

N3ss

#	Record 0 to 10 score (_____)	CC1
88	Refused	CC1
99	Don't know	CC1

CONSISTENCY CHECKS ON N3p, N3q and N3r

If NTG_TYPE = 4

IF A3 = 8, AND N3p < 4, THEN ASK

You indicated earlier that compliance with codes or regulatory policies was one of the reasons you did the project. However, just now you scored the importance of compliance with state or federal regulations or standards such as Title 24, air quality, OSHA, or FDA regulations in your decision making fairly low, why is that?

CC1

77	RECORD VERBATIM	CC1a
88	Don't know	CC1a
99	Refused	CC1a

IF A3 ^= 8, and N3p > 7, THEN ASK

You indicated earlier that compliance with codes or regulatory policies was not one of the primary reasons you did the project. However, just now you scored the importance of compliance with state or federal regulations or standards such as Title 24,air quality, OSHA, or FDA regulations in your decision making fairly high, why is that?

CC1a

77	RECORD VERBATIM	CC3
88	Don't know	CC3
99	Refused	CC3

IF A3 = 2 or 10, AND N3r < 4, THEN ASK

NCC3 You indicated earlier that a regularly scheduled retrofit was one of the reasons you did the project. However, just now you scored the importance of compliance with your company's regularly scheduled retrofit or equipment replacement in your decision making fairly low, why is that?

77	RECORD VERBATIM	CC3a
88	Don't know	CC3a
99	Refused	CC3a

IF A3 ^= 2 and A3 ^= 9 and A3^=10 AND N3r > 7 THEN ASK

NCC3a You indicated earlier that a regularly scheduled retrofit was NOT one of the reasons you did the project. However, just now you scored the importance of compliance with your company's regularly scheduled retrofit or equipment replacement in your decision making fairly high, why is that?

77	RECORD VERBATIM	N33
88	Don't know	N33
99	Refused	N33

PAYBACK BATTERY

If INCENT <> 100 AND NTG_TYPE >= 2, THEN ASK; ELSE SKIP TO N33

P1 What financial calculations does your company typically make before proceeding with the installation of energy efficient equipment like you installed through the program?

1	Payback	P2A
2	Return on investment	P2B
77	Record VERBATIM	P3
88	Don't know	P3
99	Refused	P3

If P1 = 1 THEN ASK; ELSE SKIP TO P2B

P2A What is your threshold in terms of the payback or return on investment your company uses before deciding to proceed with installing energy efficient equipment like you installed through the program? Is it…

1	0 to 6 months	P3
2	6 months to 1 year	P3
3	1 to 2 years	P3
4	2 to 3 years	P3
5	3 to 5 years	P3
6	Over 5 years	P3

88	Don't know	P3
99	Refused	P3

IF P1 = 2 THEN ASK

P2B What is your ROI?

1	Record ROI____;	P3

P3 Did the rebate move your energy efficient equipment project within this acceptable range?

1	Yes	P4
2	No	P3a
88	Don't know	P3a
99	Refused	P3a

If P3 = 1 THEN ASK; ELSE SKIP TO P3A

P4 On a scale of 0 to 10, with a 0 meaning Not At All Important and a 10 meaning a Very Important, how important in your decision was it that the project was now in the acceptable range?

#	Record 0 to 10 score (_____)	P3a
88	Refused	P3a
99	Don't know	P3a

CONSISTENCY CHECKS ON N3b and P3
IF P3 = 1, AND N3b < 5, THEN ASK

P3a The rebate seemed to make the difference between meeting your financial criteria and not meeting them, but you are saying that the rebate didn't have much effect on your decision, why is that?

77	Record VERBATIM	P3e
88	Don't know	P3e
99	Refused	P3e

IF P3 = 2, AND N3b > 5, THEN ASK

P3e The rebate didn't cause the installation of energy efficient equipment to meet your company's financial criteria, but you said that the rebate had an impact on the decision to install this energy efficient equipment. Why did it have an impact?

77	Record VERBATIM	N33
88	Don't know	N33
99	Refused	N33

IF N3A(8||10) | N3D(8||10) | N3E(8||10) | N3F(8||10) | N3J(8||10) | N3M(8||10) | N3N(8||10) | N3O(8||10) | N3P(8||10) | N3R(8||10);

Next, I would like you to rate the importance of the PROGRAM in your decision to implement this MEASURE as opposed to other factors that may have influenced your decision such as...(SCAN BELOW AND READ TO THEM THOSE

DISPLAY

ITEMS WHERE THEY GAVE A RATING OF 8 or higher)

<%N3A> Age or condition of old equipment,	...@[%N3A>@
<%N3D> Equipment Vendor recommendation	...@[%N3D>@
<%N3E> Previous experience with this measure	...@[%N3E>@
<%N3F> Previous experience with this program	...@[%N3F>@
<%N3J> Standard practice in your business/industry	...@[%N3J>@
<%N3M> Corporate policy or guidelines	...@[%N3M>@
<%N3N> Payback on investment.	...@[%N3N>@
<%N3O> To improve production as a result of lighting,	...@[%N3O>@
<%N3P> Compliance with state or federal regulations or standards such as Title 24, air quality, OSHA, or FDA regulations	...@[%N3P>@
<%N3R> Compliance with normal maintenance or retrocommissioning policies or your companies regularly scheduled retrofit or lighting replacement	...@[%N3R>@

If you were given 10 points to award in total, how many points would give to the importance of the program and how many points would you give to these other factors?\

DISPLAY

How many of the ten points would you give to the importance of the PROGRAM in your decision?

N41

#	Record 0 to 10 score (_____)	N42
88	Refused	N42
99	Don't know	N42

N42 and how many points would you give to all of these other factors?\

#	Record 0 to 10 score (_____)	N41a
88	Refused	N41a
99	Don't know	N41a

If N41 <> 88 and N41 <> 99 and N42 <> 88 and N42 <> 99, computer N41 + N42. While N41+N42 <> 10, display:

__We want these two sets of numbers to equal 10.
<%N41> for Program influence and
<%N42> for Non Program factors

IF DELAMP <> 1;

Was the installion of this measure....<%NTGMEASURE> ...a replacement of existing equipment or was it additional equipment you installed in your facility?

REPLACE

1	Replace	DISPLAY
2	Add-on	DISPLAY

88	Refused	DISPLAY
99	Don't know	DISPLAY

DISPLAY

Now I would like you to think about the action you would have taken with regard to the installation of this equipment if the program had not been available.

IF REPLACE(1) | DELAMP == 1

N5

Using a likelihood scale from 0 to 10, where 0 is Not at all likely and 10 is Extremely likely, if THE PROGRAM had NOT BEEN AVAILABLE, what is the likelihood that you would have installed exactly the same program qualifying energy efficient equipment that you did in this project?

#	Record 0 to 10 score (_____)	N5a
88	Refused	N5B
99	Don't know	N5B

IF REPLACE(2) THEN ASK; ELSE SKIP TO N6

N5aa

Using a likelihood scale from 0 to 10, where 0 is Not at all likely and 10 is Extremely likely, if THE PROGRAM had NOT BEEN AVAILABLE, what is the likelihood that you would have installed exactly the same energy efficient equipment at the same time as you did?

#	Record 0 to 10 score (_____)	N6
88	Don't know	N6
99	Refused	N6

CONSISTENCY CHECKS
IF N3b > 7 and N5 > 7, THEN ASK

N5a

When you answered ...<%N3B> ... for the question about the influence of the rebate, I would interpret that to mean that the rebate was quite important to your decision to install. Then, when you answered ..<%N5>... for how likely you would be to install the same equipment **without** the rebate, it sounds like the rebate was not very important in your installation decision. I want to check to see if I am misunderstanding your answers or if the questions may have been unclear. Will you explain in your own words, the role the rebate played in your decision to install this efficient equipment?

77	Record VERBATIM	NN5aa
88	Don't know	NN5aa
99	Refused	NN5aa

NN5aa

Would you like for me to change your score on the importance of the rebate that you gave a rating of <%N3B> and/or change your rating on the likelihood you would install the same equipment without the rebate which you gave a rating of <%N5> and/or we can change both if you wish?

1	No change	N5b

77	Record how they would rate rebate influence and how they would rate likelihood to install without the rebate	N5b
88	Don't know	N5b
99	Refused	N5b

ASK IF REPLACE(1)

N5b Using the same scale as before, if the program had not been available, what is the likelihood that you would have done this project at the same time as you did?

#	Record 0 to 10 score (_____)	DISPLAY
88	Refused	DISPLAY
99	Don't know	DISPLAY

DEFERRED FREE RIDERSHIP FOLLOW-UP

DISPLAY If N5b < 9; ELSE SKIP TO N6

DISPLAY Next, I'd like to ask a couple of questions to help us estimate at what point in the future you would definitely have replaced your existing equipment. We understand that you can't know exactly when you would have done this, especially so far into the future. We're just trying to get a sense of how long you think the current equipment or process would have kept serving your company's needs before you had to or chose to replace it. TD1

TD1 If the program had not been available, how likely is it that you would have replaced your existing equipment within one year of when you did?

1	Definitely would have (1.0 probability)	N9bb
2	Probably would have (0.75 probability)	TD2
3	50-50 chance (0.50 probability)	TD2
4	Probably not (0.25 probability)	TD2
5	Definitely not (0.0 probability)	TD2

IF TD1 = 2, 3, 4, 5 ASK TD2, ELSE GO TO N9bb

TD2 If the program had not been available, how likely is it that you would have replaced your existing equipment within three years of when you did?

1	Definitely would have (1.0 probability)	N9bb
2	Probably would have (0.75 probability)	TD3
3	50-50 chance (0.50 probability)	TD3
4	Probably not (0.25 probability)	TD3
5	Definitely not (0.0 probability)	TD3

IF TD2 = 2, 3, 4, 5 ASK TD3; ELSE GO TO N6

TD3 If the program had not been available, how likely is it that you would have replaced your existing equipment within five years of when you did?

1	Definitely would have (1.0 probability)	N9bb

2	Probably would have (0.75 probability)	N9bb
3	50-50 chance (0.50 probability)	N9bb
4	Probably not (0.25 probability)	N9bb
5	Definitely not (0.0 probability)	N9bb

CONSISTENCY CHECK ON AGE

IF (N3a > 6 AND TD3 = 3, 4 or 5) THEN ASK; ELSE SKIP TO N6

Earlier when I asked about the influence of the age/condition of the old equipment on your decision to install this new equipment, you gave me a rating of <%N3A> out of ten. I would interpret this to mean that the age/condition was quite influential in your decision to install this new equipment when you did. Perhaps I have either recorded something incorrectly or maybe you could explain in your own words the role the age/condition of the existing equipment played in your decision to install this new energy efficient equipment.

N9bb		
77	Record VERBATIM	N6
88	Don't know	N6
99	Refused	N6

ADDITIONAL BASELINE INPUT

Now I would like you to think one last time about what action you would have taken if the program had not been available. Which of the following alternatives would you have been MOST likely to do?

N6		
1	Install/Delamped fewer units	N7
2	Install standard efficiency equipment or whatever required by code	N7
3	Installed equipment more efficient than code but less efficient than what you installed through the program	N7
4	Done nothing (keep existing equipment as is)	N7
5	Done the same thing I would have done as I did through the program	N7
6	Repair/rewind or overhaul the existing equipment	N7
77	Something else (specify what _____)	N7
88	Don't know	N7
99	Refused	N7

Ask if N6 = (1, 2, 3, 4) and (N5 > 8 and N5b > 8 OR N5aa > 8)

In an earlier response, you said that if the program had not been available, there was a very high likelihood that you would have installed exactly the same equipment as you did through the program. However, just now you have indicated that you would not have installed the same equipment as you did without the benefit of the program. Can you explain to me why there is this difference?

N7		
77	Record VERBATIM	N6a
88	Don't know	N6a
99	Refused	N6a

Ask if N6(1);

N6a	How many fewer units would you have installed/Delamped? (It is okay to take an answer such as ...HALF...or 10 percent fewer ... etc.)	
77	RECORD VERBATIM	ER2
88	Refused	ER2
99	Refused	ER2

Ask if N6(3);

N6b	Can you tell me what model or efficiency level you were considering as an alternative? (It is okay to take an answer such as … 10 percent more efficient than code or 10 percent less efficient than the program equipment)	
77	RECORD VERBATIM	ER2
88	Don't know	ER2
99	Refused	ER2

Ask if N6(6);

N6c	How long do you think the repaired equipment would have lasted before requiring replacement?	
77	RECORD VERBATIM	ER2
88	Don't know	ER2
99	Refused	ER2

EARLY REPLACEMENT BATTERY

[IF N5b < 8 and A3 = 1, 4, 8, or 10 THEN ASK. ELSE SKIP TO SP1]

DISPLAY	Earlier, when I asked you a question about why you decided to implement the project using high efficiency equipment, you gave reasons related to <A3> Now I would like to ask you some follow up questions regarding these responses you gave me.	ER2

IF REPLACE(1);

ER2	How many more years do you think your equipment would have gone before failing and required replacement?	
77	___ Estimated Remaining Useful Life (in years)	ER6
88	Don't know	ER6
99	Refused	ER6

IF A3 = 4, THEN ASK

ER6	How much downtime did you experience in the past year?	
77	_____Downtime Estimate (in weeks)	ER9
88	Don't know	ER9
99	Refused	ER9

ER9	In your opinion, based on the economics of operating this equipment, for how many more years could you have kept this equipment functioning?	

Yrs	___ Estimated Remaining Useful Life	ER11
88	Don't know	ER11
99	Refused	ER11

IF A3 = 8, THEN ASK

ER15 Can you briefly describe the specific code/regulatory requirements that this project addressed?

77	RECORD VERBATIM	ER19
88	Don't know	ER19
99	Refused	ER19

IF A3 = 10, THEN ASK

ER19 Can you briefly describe the specific company policies regarding regular/normal maintenance/replacement policy(ies) that were relevant to this project? Or briefly describe the specific company policies regarding regular equipment retrofits and remodeling?

77	RECORD VERBATIM	PP1
88	Don't know	PP1
99	Refused	PP1

PROCESS QUESTIONS - ASK ALL

PP1 What do you believe the PROGRAM'S primary strengths are?

77	Record VERBATIM	PP2
88	Don't know	PP2
99	Refused	PP2

PP2 What concerns do you have about the PROGRAM, if any? (IF NEEDED: What do you view as the primary features that need to be improved?)

77	Record VERBATIM	PP4
88	Don't know	PP4
99	Refused	PP4

PP4 On a scale of 0 - 10, where 0 is completely dissatisfied and 10 is completely satisfied, how would you rate your OVERALL satisfaction with the <%PROGRAM>?

#	Record 0 to 10 score (_____)	PP5
88	Refused	PP5
99	Don't know	PP5

IF PP4 < 4 THEN ASK; ELSE SKIP TO PP5A

PP5 Why do you say that?

77	Record VERBATIM	PP5A
88	Don't know	PP5A
99	Refused	PP5A

PP5A	Using the same 0 - 10 scale, how would you rate your OVERALL satisfaction with the performance of the energy efficient measures you had installed?	
#	Record 0 to 10 score (_____)	PP5B
88	Refused	PP6
99	Don't know	PP6

IF PP5A < 6 THEN ASK; ELSE SKIP TO PP6

PP5B	Why do you say that?	
77	Record VERBATIM	PP6
88	Don't know	PP6
99	Refused	PP6

PP5C	Using the same 0 - 10 scale, how would you rate your OVERALL satisfaction with the quality of the installers' work?	
#	Record 0 to 10 score (_____)	PP5D
88	Refused	PP5E
99	Don't know	PP5E

PP5D	Why do you say that?	
77	Record VERBATIM	PP5E
88	Don't know	PP5E
99	Refused	PP5E

PP5E	From your perspective, what if anything could be done to improve the quality of the installers' work?	
77	Record VERBATIM	PP6
88	Don't know	PP6
99	Refused	PP6

In qsl: IF ^UNRECORDED(IMPLEMENTER);

ASK IF %IMPLEMENTER = "a local government", "state government", or "an independent firm"; ELSE PP10

PP6	The program you participated in was run by %IMPLEMENTER. Has your organization participated in energy efficiency programs run by <%UTILITY> in the past three years?	
1	Yes	PP8
2	No	PP10
88	Refused	PP10
99	Don't know	PP10

ASK IF PP6=1

Please consider your recent experience with the PROGRAM run by %IMPLEMENTER versus your past experience with the program run by <%UTILITY>. Are there any differences between the two that stand out? Any there attributes or services that seemed better in one or the other?

PP8

1	No differences	PP10
77	Yes, Record DIFFERENCES	PP10
88	Don't know	PP10
99	Refused	PP10

ASK IF IOU_PROG = 1 (utility administered program); ELSE PP12

The program you participated in was run by <%UTILITY>. Have you participated in programs run by governments, institutions, or other independent firms in the past three years? (select all that apply)

PP10

1	Local Government	PP14
2	State Government or Institution	PP14
3	Independent Firm	PP12
88	Refused	PP16
99	Don't know	PP16

ASK IF PP10 = 3;

Please consider your experiences with the program run by an independent firm versus your recent experience with the program run by an independent firm versus your recent experience with <%UTILITY>'s program. Are there any differences between the two that stand out? Are there attributes or services that seemed better in one or the other? (NOTE: SPECIFY WHICH ENTITY IS REFERRED TO IN EACH COMMENT)

PP12

1	No differences	PP16
77	Yes, RECORD DIFFERENCES	PP16
88	Refused	PP16
99	Don't know	PP16

ASK if PP10 in (1, 2)

Please consider your experiences with the program run by a government or institution versus your recent experience with <%UTILITY>'s PROGRAM. Are there any differences between the two that stand out? Are there attributes that seemed better in one or the other? (NOTE: SPECIFY WHICH ENTITY IS REFERRED TO IN EACH COMMENT)

PP14

77	Yes, Record VERBATIM	PP16
78	No differences	PP16
88	Refused	PP16
99	Don't know	PP16

ASK if PP6 = 1 AND PP10 = 1, 2 or 3. ELSE PP3

Which entity, the <%UTILITY> program or the <%IMPLEMENTER> <%PP10> program was more effective in supporting your organization's decision making process?

PP16

1	%IMPLEMENTER	PP18
2	%UTILITY	PP18
3	Very little difference	PP18
88	Refused	PP18
99	Don't know	PP18

If PP16 in (1, 2) then ask; else skip to PP20

PP18 How significant was this difference, would you say…

1	Very Significant	PP20
2	Somewhat Significant	PP20
3	Not very significant	PP20
88	Refused	PP20
99	Don't know	PP20

PP20 Which entity had a better technical understanding of the energy use at your facility and provided the best technical assistance in specifying the project?

1	%IMPLEMENTER	PP22
2	%UTILITY	PP22
3	Very little difference	PP22
88	Refused	PP22
99	Don't know	PP22

If PP20 in (1, 2) then ask; else skip to PP24

PP22 How significant was this difference, would you say…

1	Very Significant	PP24
2	Somewhat Significant	PP24
3	Not Very Significant	PP24
88	Refused	PP24
99	Don't know	PP24

PP24 Which entity was more effective in supporting you through the application process

1	%IMPLEMENTER	PP26
2	%UTILITY	PP26
3	Very little difference	PP26
88	Refused	PP26
99	Don't know	PP26

If PP24 in (1, 2) then ask; else skip to PP3;

PP26 How significant was this difference, would you say…

1	Very Significant	PP3
2	Somewhat Significant	PP3
3	Not very significant	PP3

88	Refused	PP3
99	Don't know	PP3

PP3 Do you have any comments on the current incentive structure of the PROGRAM?

1	No	ID1
77	Yes - RECORD COMMENTS_____	ID1
88	Don't know	ID1
99	Refused	ID1

LONG TERM INFLUENCE
If NTG_TYPE >= 2
IF N3f > 4, THEN ASK, ELSE CCC12A

DISPLAY Now I'd like you to think about your organization's experiences with %UTILITY's energy efficiency programs and efforts over the longer term, for example, over the past 5, 10, or even 20 years.
In an earlier question, you indicated that your previous experience with utility energy efficiency programs was a factor that influenced your decision to implement this PROJECT. I would like to ask you a few questions about this experience. LT2

LT2 For how many years have you been participating in %UTILITY's energy efficiency programs?

# yrs	Record Number of Years	LT3
88	Refused	LT3
99	Don't know	LT3

LT3 During this time, how many times has your organization participated in these PROGRAM(s)?

1	7 to 10 times, or more	CA6
2	4 to 7 times	CA6
3	2 to 4 times	CA6
4	less than 2 times	CA6
88	Refused	LT6
99	Don't know	LT6

IF LT3(1||4);

CA6 What type of equipment did you install through this (these) program(s)?
[READ RESPONSE CATEGORIES]

1	Indoor lighting	LT6
2	Cooling equipment	LT6
3	Natural gas equipment, such as water heater, furnace or appliances	LT6
4	Insulation or windows	LT6

5	Refrigeration	LT6
6	Industrial process equipment	LT6
7	Greenhouse heat curtains	LT6
8	Food service equipment	LT6
77	OPEN \SOMETHING OTHER (specify)	LT6
88	Refused	LT6
99	Don't Know	LT6

LT6 What factors led you to participate in these program(s)?

77	Record VERBATIM	LT7
88	Refused	LT7
99	Don't know	LT7

LT7 And exactly how did that experience help to convince you to install this energy efficient equipment?

77	Record VERBATIM	LT8
88	Refused	LT8
99	Don't know	LT8

IF LT3 = 1 or 2, THEN ASK. ELSE CCC12A.

LT8 Have these programs had any long-term influence on your organization's energy efficiency related practices and policies that go beyond the immediate effect of incentives on individual projects? [DO NOT READ: Examples are causing them to add energy efficiency procurement policies, internal incentive or reward structures for improving energy efficiency, or adoption of energy management best practices.]

1	Yes	LT9
2	No	CC12A
88	Refused	CC12A
99	Don't know	CC12A

If LT8 = 1 then ask; else skip to CA2;

LT9 Has your organization developed a specification policy for the selection of energy efficient equipment? [EXAMPLES... REQUIREMENTS THAT ALL NEW FLUORESCENT LIGHTING SYSTEMS USE ELECTRONIC BALLAST, OR THAT ALL NEW MOTORS BE PREMIUM EFFICIENCY]

1	Yes	LT10
2	No	LT10
88	Refused	LT10
99	Don't know	LT10

LT10 Has your organization assigned responsibility for controlling energy usage and costs to any of the following?

1	An in-house staff person	LT11
2	A group of staff	LT11

3	An outside contractor	LT11
4	NONE OF THESE	LT11
88	Refused	LT11
99	Don't know	LT11

LT11 Does your organization have any internal incentive or reward policies for business units or staff responsible for managing energy costs?

1	Yes	LC7
2	No	CA2
88	Refused	CA2
99	Don't know	CA2

Ask if LT11(1)

LC7 How do these incentive/reward structures work?

77	OPEN/Record	CA2
88	Refused	CA2
99	Don't know	CA2

CA2 In marketing materials or in communications with customers, does your company highlight the ways in which your business is environmentally conscious?

1	Yes	RETURN TO REMAINDER OF SURVEY
2	No	RETURN TO REMAINDER OF SURVEY
77	OPEN\RECORD OTHER	RETURN TO REMAINDER OF SURVEY
88	Refused	RETURN TO REMAINDER OF SURVEY
99	Don't know	RETURN TO REMAINDER OF SURVEY

ONSITE RECRUITING

TO SCHEDULE INSTALLATION OF MONITORING EQUIPMENT

If LOGGER= 1; Else Skip to Comment1

DISPLAY	In order to improve this program's performance, <%UTILITY> would also like to make an accurate measurement of the energy savings associated with the energy efficient equipment installed by collecting and analyzing information from selected customers. If you agree to participate, Itron, on behalf of <%UTILITY>, will come to your business to install monitoring devices on your equipment to record when the equipment is in use. The monitoring devices will be installed in an unobtrusive place and would be removed by us at the end of the research project. We expect the site visit to take about two hours. We'll come back and remove the monitoring devices within 3-6 months. Note, the electric use data will be used strictly for the study of the <%PROGRAM> and will not affect your electric service at all. You will need to sign a brief participation agreement.	LOG_REC

LOG_REC	Are you interested in participating in this project?	
1	Yes	LOG_NAME
2	No	Comment1
88	Refused	Comment1
99	Don't know	Comment1

ASK IF LOG_REC(1)

LOG_NAME	May I have the name of the person that our technician should contact to make an appointment?	LOG_PHONE
LOG_PHONE	What would be the most convenient phone number for our technecian to contact ....<%LOG_NAME>?	LOG_ALT
LOG_ALT	In the even that ....<%LOG_NAME> ... is unavailable, would there be an alternate contact that we could schedule an appointment with?	LOG_PH_ALT
LOG_PH_ALT	What would be the most convenient phone number to reach this person?	LOG_NOTE

LOG_NOTE	Are there any notes that would facilitate our technician@'s ability to make an appointment? For example, are some days of the week better for making contacts, are early mornings better or are afternoons better?	
66	No Notes	OS_NAME1
77	Record Notes	OS_NAME1

IF ONSITE = 1

TO SCHEDULE ONSITE VERIFICATION

COMMENT1	As we've discussed, the <%PROGRAM> is an important component of the California Public Utilities Commission's ongoing efforts to save energy and reduce emissions affecting climate change. In order to improve this program's performance, the CPUC would like to make an accurate measurement of the energy savings associated with energy efficiency equipment installed by collecting and analyzing information from selected customers. Your input to this research is extremely important. By receiving a rebate through the <%PROGRAM>, your firm has agreed to

allow verification of the installation of the equipment rebated through the program.

Our verification technician will need to meet a facilities representative of your company. This should be either the manager of the facility or part of the facilities staff.
May I please have the name of the person who our technician can call you to set up an appointment time?

OS_NAME1

1	Same as for logger	HB_Lift
77	Record Name	OS_PHONE1
99	Don't know	T&T

IF OS_NAME1(77)
May I also have the best phone number for the technician to reach this person?

OS_PHONE1

&OS_PHONE1	PHONE FOR PRIMARY CONTACT	OTHER
88	Refused	T&T
99	Don't know	T&T

Is there another person that the engineer might speak with at your company, if this primary person is not available?

OTHER

&OTHER	Get name	OS_NAME2
88	Refused	T&T
99	Don't know	T&T

May I please have their name so our technician can call them at another time?

OS_NAME2

&OS_NAME2	Get name	OS_PHONE2
88	Refused	T&T
99	Don't know	T&T

May I also have the best phone number for the technician to reach them?

OS_PHONE2

&OS_PHONE2	Get phone number	HB_Lift
88	Refused	T&T
99	Don't know	T&T

Ask if HIGHBAY = 1 or (HB1 > 12 and HB1<>66 and HB1<>88 and HB1<>99) or HB2 = 1 or HB1a = 1; Else skip to OS_Business
Do you have some form or a lift or ladder available to reach the lighting at your facility that is located 13ft or more above ground?

HB_Lift

1	Yes	OS_Business
2	No	OS_Business
88	Refused	T&T
99	Don't know	T&T

OS_Business Do you have a sign or business name other than <%BUSINESS> that our technicians should look for when they visit your site?

1	Yes	OS_Bus_Name
2	No	Vendor_Name
88	Refused	T&T
99	Don't know	T&T

Ask if OS_BUSINESS(1)

OS_Bus_Name What is the sign or business name they should be looking for?

1	Get name	Vendor_Name

VISIT_NOTES DO NOT READ.....If you have any special notes about the on@-site visit or the installation of loggers, add these notes here.

1	No additional notes	Vendor_Name
77	Record Notes	Vendor_Name

Ask if V1(1)

Vendor_Name Earlier you stated that you had a vendor/contractor that helped you with the installation of the lighting equipment that was installed through the 2010-2012 <%UTILITY> Program. Could you provide me with their name and phone number?

1	Cannot provide	END
77	Record Name, Phone Number, Email Address or any other information they can provide. More is better.	END
88	Refused	END
99	Don't know	END

END	Those are all the questions I have for you today. On behalf of the CPUC, I would like to thank you very much for your kind cooperation. Have a good day.	

APPENDIX B PARTICIPANT ON-SITE SURVEY INSTRUMENT

CPUC 2015 Nonresidential
On-Site Verification Survey Form

General Site Information (from phone survey & IOU tracking database)

Itron SiteID			
Sample Strata		What to Do	
Evaluation		What to	

Corporate (Multi-Site) Name			
Business Name (Tracking			
Actual Business Name			
Service Address			
City		Zip Code	
CORRECTIONS TO SITE INFORMATION			
Revised Corp. (Multi-Site)			
Revised Business Name			
Revised Service Address			
Revised City		Revised Zip	

Site Contact Information

PS Completion Date:	_____	Length (min)	____	Respondent:	____ ____ ____ ____	Date of Install:	_____

	Contacted	Contact Name	Phone Number	Alternate Phone	Email Address
OS Primary	☐				
OS Back-up	☐				
OS Other	☐				

Note: Use the "Contacted" check box to indicate the actual contact(s) for the site visit.

Scheduling Notes/Special Instructions for On-site Visit: _____

_____

Survey Tracking Information

Survey Company:		Assigned Surveyor's Initials:	
Survey Travel Mileage:	miles	Total Travel Time	hrs
Survey Duration (24 hr clock)	Start:	Survey Duration (24 hr clock)	End:
Total Onsite Time	hrs	Total Time to Fill Out Survey Form	hrs

	Date:	• **Initials**
Field survey completed:	__ __ / __ __ / __ __	__ __ __

Survey received from surveyor:	__ __ / __ __ / __ __	__ __ __
Initial QC check completed:	__ __ / __ __ / __ __	__ __ __
Survey sent back to surveyor (*if needed*):	__ __ / __ __ / __ __	__ __ __
Received from surveyor (*if needed*):	__ __ / __ __ / __ __	__ __ __
Itron QC completed:	__ __ / __ __ / __ __	__ __ __
Data entry (DE) completed:	__ __ / __ __ / __ __	__ __ __
Logger extraction DE complete:	__ __ / __ __ / __ __	__ __ __
Follow-up Logger Extraction DE complete:	__ __ / __ __ / __ __	__ __ __

IOU Tracking Data Measure Summary Sheet

This is a summary of all of the measures implemented at this site as extracted from the IOU tracking database. All of the measures listed here should also be found on the measure-level verification forms.

Measure Category	Meas ID	Measure Code	IOU MeasureName	Unit Basis	Rebated # of Units	Reference Meas Code

Lighting Other Description

Measure Code	Revised MeasureName Description	Rebated # of Units

Phone Survey Self-Reported Measure Counts for Calculated kWh Measures

CATI Measure Category-RebatedUnits-UnitBasis	Self Report # of Units

Phone Survey High Bay Information

High Bay?	Max Fixture Height (ft)	Access to fixtures via lift or ladder?

Custom Measure Summary

Meas ID	Measure Name	Measure State	Activity Area	Unit Basis	Qty	Lamps per Fixture	Length	Type	Watts

Site & Business Characteristics

PRIMARY BUSINESS TYPE DESCRIPTION: *(do not leave blank)*	

Phone Survey	**Phone Survey Building Type:**	*FM050*
	Detailed Building Type:	*FM050a-j*

Recent Survey Area Changes: Give a brief description about any changes made to this site since January 2011 that significantly impacted energy usage.		
Percent of Site Lighting Retrofitted: What percent of the site lighting was retrofitted? Describe whether it was almost all of the lighting or just certain areas.		%

Fields in this table will be populated as much as possible with data from the phone survey. However, any fields that are blank should be completed during the on-site verification. Any fields that are incorrect should also be corrected.

Electric Utility	PGE SCE SDGE SMUD LADWP OT _____		
Gas Utility	PGE SCG SDGE AllElec/None Propane LBGO SWG OT _____		
Is this premise owner-occupied (**O**) or leased (**L**)?	*CC4*	Revised	O
How many full-time equivalent employees work at this premise?	*FM070*	Revised	
What is the total occupied floor area of this premise? (exclude prkg garage)	*CC2a / CC2b* ft^2	Revised	_____ ft^2
-- If the premise has an enclosed parking garage, what is the floor area?	_____ft^2		
What percent of the total floor area is heated or cooled?	*CC2c / CC2d* %	Revised	_____
How many buildings are part of this premise?			
What year was the majority of the facility built?	*CC8*	Revised	
Cooling Type: **1**=No A/C **2**=Split-System **3**=PkgRooftop **4**=PTAC/PTHP **5**=EvapCool **6**=Chiller **7**=IndivAC/HP **8**=WLHP **OT**=Other		Revised	
Heating Fuel Type: **1**=Electric **2**=Gas **3**=Both **4**=Propane **5**=None **OT**=Other		Revised	
What kind of site is this? **P** = Part of a bldg **B** = Single building **SM** = Small multi-building **CM** = Campus (multi-bldg, subsampled bldgs) **OT** = Other _____			
For single, stand-alone buildings or partial buildings: Number of stories/floors			

Premise-Level Schedule Definitions

Standard Holidays *(check all that apply)* ☐N/A

Indicate below which, if any, standard holidays that the business is closed or operation deviates drastically from normal/typical operations, and indicate on Form BUS_HRS what the holiday operation hours are.

Indicate any additional holidays in the comment block.

New Year's Eve	☐	July 4th Celebrated	☐
New Year's Day	☐	Labor Day	☐
New Year's Day Celebrated	☐	Columbus Day	☐
Martin Luther King Day	☐	Veterans' Day	☐
Presidents' Day	☐	Thanksgiving	☐
St. Patrick's Day	☐	Thanksgiving Friday	☐
Easter Sunday	☐	Christmas Eve	☐
Memorial Day	☐	Christmas Day	☐
Flag Day	☐	Christmas Day Celebrated	☐
July 4th	☐	Caesar Chavez Day	☐
Other (1) _____	☐	Other (2)_____	☐

Seasonal Operation Periods ☐N/A

Define seasonal operation periods for significant periods of time where business hours and/or equipment operation differs significantly from normal or typical business hours and/or equipment operation. To indicate seasonal operation periods, provide a brief description of the period (e.g. "spring break", "winter break", "summer break", "extended holiday hours"), and list the beginning/ending months (1-12) and days for up to three time periods.

Typical Schedule			Seasonal Time Period					
1			2			3		
Description			Description			Description		
Begin Month/Day			Begin Month/Day			Begin Month/Day		
End Month/Day			End Month/Day			End Month/Day		
Begin Month/Day			Begin Month/Day			Begin Month/Day		
End Month/Day			End Month/Day			End Month/Day		
Begin Month/Day			Begin Month/Day			Begin Month/Day		
End Month/Day			End Month/Day			End Month/Day		

Holiday and Seasonal Operation Comments:

Business Schedule

Primary Business Hours

Define typical operation for <u>all</u> Day Types listed below and specify hours in military time (00 to 24). For partial (i.e. not full) operation days, also indicate the approximate % of full operation as Partial Op %.

Day Type	From Phone Survey	Corrected Business Hours	Closed All Day?	Open 24 hrs?	PartialOp%
Monday	from _____ to _____	from _____ to_____			
Tuesday	from _____ to _____	from _____ to_____			
Wednesday	from _____ to _____	from _____ to_____			
Thursday	from _____ to _____	from _____ to_____			
Friday	from _____ to _____	from _____ to_____			
Saturday	from _____ to _____	from _____ to_____			
Sunday	from _____ to _____	from _____ to_____			
Holidays	from _____ to _____	from _____ to_____			

Seasonal Operation Business Hours – Time Period 2

Day Type	From Phone Survey	Corrected Business Hours	Closed All Day?	Open 24 hrs?	PartialOp%
Monday	from _____ to _____	from _____ to_____			
Tuesday	from _____ to _____	from _____ to_____			
Wednesday	from _____ to _____	from _____ to_____			
Thursday	from _____ to _____	from _____ to_____			
Friday	from _____ to _____	from _____ to_____			
Saturday	from _____ to _____	from _____ to_____			
Sunday	from _____ to _____	from _____ to_____			
Holidays	from _____ to _____	from _____ to_____			

Seasonal Operation Business Hours – Time Period 3

Day Type	Business Hours	Closed All Day?	Open 24 hrs?	PartialOp%
Monday	from _____ to_____	Y N	Y N	
Tuesday	from _____ to_____	Y N	Y N	
Wednesday	from _____ to_____	Y N	Y N	
Thursday	from _____ to_____	Y N	Y N	
Friday	from _____ to_____	Y N	Y N	

Saturday	from _____ to_____	Y N	Y N	
Sunday	from _____ to_____	Y N	Y N	
Holidays	from _____ to_____	Y N	Y N	

Activity Area Definitions

Activity Area ID# Assignments *Identify an Area ID# for each distinct Activity Area type within the surveyed area. Indicate each area on the Site Plan sketch, Form PREM_SKETCH. Also consider lighting system controls and operation when defining these areas.*

Area ID#	Activity Area Code (AA Code)	Surveyor's Description of Area (include floor and Bldg identifiers if needed)	% of Total Premise Floor Area	Windows or Skylights	Conditioned Space Type Code	Total Qty of this Area Type On-site
1				W S		
2				W S		
3				W S		
4				W S		
5				W S		
6				W S		
7				W S		
8				W S		
9				W S		
10				W S		
11				W S		
12				W S		
13				W S		
14				W S		
15				W S		
16				W S		
17				W S		
18				W S		
19				W S		
20				W S		
21				W S		
22				W S		
23				W S		
24				W S		
25				W S		

Conditioned Space Type Codes
CH = Cooled & Heated **CL** = Only Cooled **HT** = Only Heated **ECH** = EvapCooled & Heated **ECL** = Only EvapCool
NU = HVAC present but not used **RF** = Refrigerated **UN** = Unconditioned **OU** = Outside **OT** = Other (describe in comments)

Premise/Site-Plan Sketch

This sketch should provide a high-level view of the premise and its surroundings as it is actually configured. Attach site plans and floor plans available from other sources. Sketch all buildings and the closest streets/roadways in both directions. Mark the orientation of True North. Use multiple sheets/drawings if necessary. Also indicate the "front"or primary entrance for each building. A site map or site plans can be used in place of this, as long as streets can be shown.

Hourly Operation Schedules

Use this form if equipment operation is independent of Business Hours as indicated on Form BUS_HRS. Use one block for each end use. Indicate the applicable daytypes for each day type schedule, and account for all day types including holidays. Specify the % of max. occupancy or equipment-on for all time periods, and be sure to accurately capture transition periods. Pay attention to lighting control type as a separate schedule is needed for different control types.

Hour	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_____

Applicable		% Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_____

Applicable		% Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_____

Applicable		**%** Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Hourly Operation Schedules

Use this form if equipment operation is independent of Business Hours as indicated on Form BUS_HRS. Use one block for each end use. Indicate the applicable daytypes for each day type schedule, and account for all day types including holidays. Specify the % of max. occupancy or equipment-on for all time periods, and be sure to accurately capture transition periods. Pay attention to lighting control type as a separate schedule is needed for different control types.

Hour	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_____

Applicable		% Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_____

Applicable		% Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_____

Applicable		**%** Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Hourly Operation Schedules

Use this form if equipment operation is independent of Business Hours as indicated on Form BUS_HRS. Use one block for each end use. Indicate the applicable daytypes for each day type schedule, and account for all day types including holidays. Specify the % of max. occupancy or equipment-on for all time periods, and be sure to accurately capture transition periods. Pay attention to lighting control type as a separate schedule is needed for different control types.

Hour	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_____

Applicable		% Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Schedule #___ End Use:_____ LtgCtrlType:_____ Description_____

Applicable		% Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Lighting Logger Installation Form

Installation Date		**Extraction Date**	
Installer's Initials		**Extraction Initials**	
Scheduled Extraction Date			

Installation

Logger Serial Number					
Primary or Backup Logger?	P B	P B	P B	P B	P B
Placement Area ID# (ref only)					
Lighting Tech Type (HIM)	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**
Logger Placement on Fixture	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)
Placement Description Include building, floor, room #, etc. and be descriptive enough that it can be located for extraction.					
Schedule #					

Extraction

Logger Intact? See Legend Belo	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***
Logger Tested "OK" (On/Off)	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA
% "ON" Time	%	%	%	%	%
Extraction Comments					
Logger Date&Time (HH:MM)					
Computer Date&Time (HH:MM)					
Alternate Extraction Date					

Logger Intact: "Y" – If logger is as originally installed, does not appear to be tampered with, and display indicates the logger is working **Logger Tested "OK"** – If Logger Intact was "Y" then is it properly logging the light ON/OFF, "Y" or "N"? If Logger Intact was "N" use "NA"

Lighting Logger Installation Form (continued)

Use this table to record information for installed measurement devices such as lighting loggers.

Installation

Logger Serial Number					
Primary or Backup Logger?	P B	P B	P B	P B	P B
Placement Area ID# (ref only)					
Lighting Tech Type (HIM)	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**
Logger Placement on Fixture	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)
Placement Description Include building, floor, room #, etc. and be descriptive enough that it can be located for extraction.					
Schedule #					

Extraction

Logger Intact? (L=Lost/missing)	**Y N L** ***P***	**Y N L** ***P***	**Y N L** ***P***	**Y N L** ***P***	**Y N L** ***P***
Logger Tested "OK" (On/Off)	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA
% "ON" Time	%	%	%	%	%
Extraction Comments					
Logger Date&Time (HH:MM)					
Computer Date&Time (HH:MM)					
Alternate Extraction Date					

Logger Intact: "Y" – If logger is as originally installed, does not appear to be tampered with, and display indicates the logger is working

Logger Tested "OK" – If Logger Intact is "Y" then is it properly logging the light ON/OFF, "Y" or "N"? If Logger Intact is "N" use "NA"

Lighting Logger Installation Form (continued)

Installation

Logger Serial Number					
Primary or Backup Logger?	P B	P B	P B	P B	P B
Placement Area ID# (ref only)					
Lighting Tech Type (HIM)	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**
Logger Placement on Fixture	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)
Placement Description Include building, floor, room #, etc. and be descriptive enough that it can be located for extraction.					
Schedule #					

Extraction

Logger Intact? (L=Lost/missing)	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***
Logger Tested "OK" (On/Off)	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA
% "ON" Time	%	%	%	%	%
Extraction Comments					
Logger Date&Time (HH:MM)					
Computer Date&Time (HH:MM)					
Alternate Extraction Date					

Logger Intact: "Y" – If logger is as originally installed, does <u>not</u> appear to be tampered with, and display indicates the logger is working

Logger Tested "OK" – <u>If Logger Intact is "Y"</u> then is it properly logging the light ON/OFF, "Y" or "N"? <u>If Logger Intact is "N"</u> use "NA"

Lighting Logger Installation Form (continued)

Installation

Logger Serial Number					
Primary or Backup Logger?	P B	P B	P B	P B	P B
Placement Area ID# (ref only)					
Lighting Tech Type (HIM)	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**	**CF LF HID LED HB**
Logger Placement on Fixture	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)	**I**(nt) **E**(xt) **O**(ther)
Placement Description Include building, floor, room #, etc. and be descriptive enough that it can be located for extraction.					
Schedule #					

Extraction

Logger Intact? (L=Lost/missing)	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***	**Y N L *P***
Logger Tested "OK" (On/Off)	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA	**Y N** NA
% "ON" Time	%	%	%	%	%
Extraction Comments					
Logger Date&Time (HH:MM)					
Computer Date&Time (HH:MM)					
Alternate Extraction Date					

Logger Intact: "Y" – If logger is as originally installed, does <u>not</u> appear to be tampered with, and display indicates the logger is working

Logger Tested "OK" – <u>If Logger Intact is "Y"</u> then is it properly logging the light ON/OFF, "Y" or "N"? <u>If Logger Intact is "N"</u> use "NA"

Indoor/Outdoor LED Lamp Lighting Measures

IOU Tracking Data	Measure Category	LED_MeasCategory	
	Engineering Estimation Method	LED_EngEstMethod	
	Measure Code	LED_OS_MeasCode	
	Measure Name	LED_OS_MeasName	
	Rebated #of Units	LED_IOUUnitQtyRebated	
	IOU Unit Basis	LED_IOUUnitBasis	
	Correct Unit Basis (only if incorrect above)		
	Can Rebated measures be clearly identified?	Y N	
Visual Verification Data	Inside or outside lighting?	**I O**	
	Total number of fixtures		
	Number of lamps per fixture		
	Total number of lamps		
	Ltg Application Type Code		
	Fixture Mount Type Code		
	Ltg Control Code		
	Multilevel: Fixture or Lamp switched?	**Y N**	
Verification Counts	**(A) Installed & Operational # of units (ex post quantity)**		
	-- Was subsampling or estimation used?	**Y N**	
	-- # of lamps burned out in partial operation fixtures		
	(B) # of Non-Operable (broken/entire fixture burned-out) Units in place		
	(C) # of Units in Storage/Spares		
	-- Utility rebate sticker observed on packages?	**Y N**	
Physical Inspection Data	*Lamps/fixtures are NOT accessible (Check box & explain in comments)*	☐	
	Number of units physically inspected		
	*If more than one type	**Primary**	***Secondary**
	Lamp Wattage		
	Make/Manufacturer		
	Model/Lamp Code		
	Lamp Shape/Features Code		
	Lamp Base Type Code:	**P M C I MO ADP GU24 OT**	**P M C I MO ADP GU24 OT**
	Installed and OP # of lamps		
Baseline System Summary Data (Observed or Self-Reported)	Is post-installation operation the same as pre-retrofit operation?	**Y N**	**B SC E**
	-- If pre-retrofit operation was different, specify Sched #		
	Lamp Type Code		**B SC E**
	Watts per lamp		**B SC E**
	Number of lamps per fixture		**B SC E**
	Observed versus Rebated # of Units is: E=Equal M=More L=Less OT (describe)		**E M L OT**
If Disposition Not Equal: Site Contact/Self-Report Questions	Self-Reported # of rebated units onsite (probe for rebated under 10-12)		
	Others purchased since rebated units installed		
	(D) # of units located at Other Affiliated Sites		

Baseline Sources:

- **B** – Baseline equipment (includes physical inspection, documentation, or building/energy management system)
- **SC** – Site Contact
- **E** – Engineering estimate

Failed (and Replaced) Rebated Units (Indirect/Self-Report)	How long did units typically operate before failure (months)?	
	(E) # of rebated units that Failed, but replaced w/ incandescent	
	# of rebated units that Failed but were replaced in-kind (Ref)	
Removed Rebated Units (Indirect/Self-	**(F)** # of rebated units that were Removed and not replaced	
	-- When were the units removed? (month/year if possible)	
	-- Describe why units were removed **in comments**	
	(Sum A-F) Total # of units accounted for on-site	**(reqd)**
Total # of units (A-F) MORE than Rebated # of Units	# that were rebated by other programs/projects?	
	# that were obtained from OTHER means (explain in comments)?	
Total # of units (A-F) LESS than Rebated # of Units	# of rebated units, other site contact explanation (note in comments)	
	# of rebated units, unaccounted for	

LED – Activity Area Assignment Table

Measure Code:_____

Use this table to associate LED # of units to Activity Areas, equipment operation schedules, and lighting loggers. The values in the "Represented # of Units" column must add up to the total # of installed and operational units in the table above.

Area ID #	Sched #	Item #	Primary or Secondary Type	Control type Code	Repres. # of Units	% of Total Inst&Op. Units (Ref)	Primary Logger S/N	Ref. Logger	Back-up Logger S/N	Comments
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		
			P S			%		☐		

		%	<= Totals # of Installed & Operational Units check *(no data entry)*

Comments:_____
_____
_____
_____
_____
_____

Baseline Characterization

Please describe why these lights were changed to LEDs instead of any other lighting technology	

Approximate age of existing lighting system prior to retrofit (years)	
Condition of original fixtures prior to retrofit (**G**ood, **F**air, **P**oor)	**G F P**
What % of original fixtures were completely burned out?	
What % of original fixtures were partially burned out?	
On a scale of 1-10, Please rate the following topics on their level of influence for retrofitting the lighting	
Burned out fixtures	
Adequate lighting levels	
Major Renovation / Re-Modeling	
Safety of Occupants	
Productivity of Occupants	
Lowering energy consumption and energy bills	
Long lamp life	
Low maintenance	
Going green	
Utility Incentive	
Other (*describe in comments*)	
Considering all of the influential factors above, in the absence of an energy efficiency rebate program: How long would you have continued to operate the original fixtures before replacing	

Comments: _____
_____
_____
_____
_____

Indoor/Outdoor LED Hardwired Fixture Lighting Measures

IOU Tracking Data	Measure Category	LEDFixture _MeasCategory		
	Measure Code	LEDFixture _*OS_MeasCode*		
	Measure Name	LEDFixture_OS_MeasName		
	Rebated #of Units	LEDFixture _IOUUnitQtyRebated		
	IOU Unit Basis	*LEDFixture_IOUUnitBasis*		
	Correct Unit Basis (if incorrect above above)			
	Can Rebated measures be clearly identified?	Y N		
Visual Verification Data	Inside or outside lighting?	**I O**		
	Ceiling height in ft			
	Fixture height from floor in ft			
	Ltg Application Code			
	Fixture Mount type code			
	Total number of fixtures			
	If LED Linear Tubes or Track lighting fixtures: Fixture Replacement or Lamp Replacement	**FR LP**		
	If LED Linear Tubes or Track lighting fixtures: PREDOMINANT # Lamps per Fixture			
	If LED Linear Tubes or Track lighting fixtures: Total number of lamps			
	Lamp Shape/Features Code			
	If LED **bar, strip, string, or tape**: Provide length (ft)			
	If LED **panel/head**: Provide dimensions (length X width in ft)	Length		
	If LED **linear fixture:** Fixture dimensions (length X width in ft)	Length		
	and Tube length (ft)			
	Multilevel: Fixture or Lamp switched?	**Y N**		
Verification Counts	**(A) Installed & Operational # of units (ex post quantity)**			
	-- Was sub sampling or estimation used?	**Y N**		
	-- # of lamps burned out in partial operation fixtures			
	(B) # of Non-Operable (broken/entire fixture burned-out) Units in place			
	(C) # of Rebated Units in Storage/Spares			
Physical Inspection Data	*Check box if Fixtures are NOT accessible (explain in comments)*	☐		
	Number of units physically inspected			
	If the Unit Basis = Lamp: Provide Lamp information instead of Fixture info: Fixture Wattage:			
	Fixture Make/Manufacturer			
	Fixture Model Number			
Baseline System Summary	Is post-installation operation the same as pre-retrofit	**Y N**	**B SC E**	
	-- If pre-retrofit operation was different, specify Sched #			
	Control type Code		**B SC E**	
	Lamp Type Code		**B SC E**	
	(If LF Baseline) - Tube Length and Diameter (e.g. 4ft T12)		**B SC E**	
	# Lamps/Fixture		**B SC E**	
	Lamp Wattage		**B SC E**	
	If **NOT** LF Baseline: Fixture Description (i.e. unique characteristics)		**B SC E**	
	Observed versus Rebated # of Units is: E=Equal M=More L=Less OT (describe)		**E M L OT**	

Baseline Sources:

- **B** – Baseline equipment (includes physical inspection, documentation, or building/energy management system)
- **SC** – Site Contact
- **E** – Engineering estimate

If Disposition Not Equal: Site Contact/Self-Report Questions	Self-Reported # of rebated units onsite (probe for rebated under 10-	
	Others purchased since rebated units installed	
	(D) # of units located at Other Affiliated Sites	
Failed (and Replaced) Rebated Units (Indirect/Self-Report)	How long did units typically operate before failure (months)?	
	(E) # of rebated units that Failed, but were replaced w/different tech	
	# of rebated units that Failed but were replaced in-kind (Ref)	
Removed Rebated Units (Indirect/Self-Report)	**(F)** # of rebated units that were Removed and not replaced	
	-- When were the units removed? (month/year if possible)	
	-- Describe why units were removed **in comments**	
	(Sum A-F) Total # of units accounted for on-site	**(reqd)**
Total # of units (A-F) MORE than Rebated # of Units	# that were rebated by other programs/projects?	
	# that were obtained from OTHER means (explain in comments)?	
Total # of units (A-F) LESS than Rebated # of Units	# of rebated units, other site contact explanation (note in	
	# of rebated units, unaccounted for	

LED Fixture - Activity Area Assignment Table (AAAT) Measure Code: _____

*Use the AAAT below to associate lighting units to Activity Areas, equipment oper. Schedules, and lighting loggers. The values in the "Represented # of Units" column must add up to the **total # of Installed and Operational** units in the table above.*

- *If ONLY FIXTURE **DENT LL**: Only fill out **AAAT** below.*
- *If **DENT LL & (DENT CT or HOBO)**: Fill out **AAAT** with logger info **&** the **HIGHBAY** Form for Panel Metering*
- *If ONLY **PANEL METERING**: Check **N/A** box and only fill out **HIGHBAY** Form.*

***Circle all that apply:** (If Verify Only, circle 'NA', and fill out AAAT)*

Metering Type:	DENT LL	DENT CT	HOBO	NA

☐ **N/A**

Area ID #	Sched #	Item #	Control Type Code	Repres. # of Units	% of Total Inst&Op. Units (Ref)	Primary Logger S/N	Ref. Logger	Back-up Logger S/N	Comments
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%		☐		
					%	<= Total # of Installed & Operational Units check *(no data entry)*			

Baseline Characterization

Please describe why these lights were changed to LEDs instead of any other lighting technology	

Approximate age of existing lighting system prior to retrofit (years)	
Condition of original fixtures prior to retrofit (**G**ood, **F**air, **P**oor)	**G F P**
What % of original fixtures were completely burned out?	
What % of original fixtures were partially burned out?	
On a scale of 1-10, Please rate the following topics on their level of influence for retrofitting the lighting	
Burned out fixtures	
Adequate lighting levels	
Major Renovation / Re-Modeling	
Safety of Occupants	
Productivity of Occupants	
Lowering energy consumption and energy bills	
Long lamp life	
Low maintenance	
Going green	
Utility Incentive	
Other (*describe in comments*)	
Considering all of the influential factors above, in the absence of an energy efficiency rebate program: How long would you have continued to operate the original fixtures before replacing	

General Comments

Item #	Form Name	Comments

Site Photo Log

Record site photo information here including the PhotoID (i.e. digital file name) and a brief description of the photo where needed. Site Photos should include the site entrance and entire building, rebated measures, and close-up photos of nameplates, lamp codes, and other make/model identification. Refer to the training manual for more on what photos to take. Photo/file naming conventions is SiteID_Item# or SiteID 00# (e.g. PGE_056789_1.jpg, PGE_056789 001.jpg).

Item #	Description/Comments/Measure Code *(no data entry)*
1	
2	
3	
4	
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APPENDIX C SELF-REPORT AND BUSINESS HOUR METHODOLOGY

Are the Lights Really ON? Leveraging a Cost Effective Approach to Estimate Lighting Usage in Nonresidential Buildings

David Gonzales, Itron, Inc., San Diego, CA

Brian McAuley, Itron, Inc., San Diego, CA

ABSTRACT

There are a number of methods by which lighting usage can be estimated within nonresidential buildings. These methods range from the inexpensive, but less accurate – utilizing a facility's business hour schedule – to the more efficient, but more costly – installing onsite monitoring equipment. The difficulty with the first approach is that it ignores the variability in a facility's lighting load shape throughout open hours and does not capture any usage during closed hours or shoulder hours, which generally refer to the hours just before opening and right after closing. The latter approach involves extensive on-site visits that involve the installation of monitoring equipment over a long period of time.

This paper will discuss the methods and findings that were developed from comparing business hours and customer self-reported lighting usage to actual monitored lighting data. These results will provide evaluators with two cost effective methods for obtaining accurate lighting usage estimates within nonresidential buildings. With the self-report method, a ratio (or adjustment factor) of actual logger to self-report usage has been developed for linear and non-linear technologies at the building type and activity area level throughout open business hours. With the second approach, a usage rate (based on actual logger data) has been developed for three periods outside of open hours – an open/closed shoulder rate and a closed rate.

Introduction

This paper discusses methods that evaluators can leverage which are cost effective alternatives to installing onsite monitoring equipment to estimate lighting usage in nonresidential buildings. The paper relies on the results that were garnered from three extensive evaluation studies that were conducted within California. The onsite data collection effort for these studies included the installation of over 3,200 loggers monitoring CFLs and LEDs at more than 900 sites and roughly 5,000 loggers monitoring linear fluorescents at almost 900 sites. Along with the installation of monitoring equipment, auditors also

collected business hour schedules from the site contact, including seasonal and holiday hours as well as hourly self-reported estimates of lighting usage by activity area.

This paper will discuss the methods and findings that were developed from comparing business hours and self-reported lighting usage to actual monitored lighting usage. With the self-report method, a ratio (or adjustment factor) of actual logger to self-report usage has been developed for each technology, building type and activity area throughout open business hours. With the second approach, a usage rate (based on actual logger data) has been developed for three periods outside of open hours – an open/closed shoulder rate, which is defined as two hours prior to opening and two hours after close and a closed rate, which is defined as all closed hours not within the shoulder hours.

Background

This paper leverages a method for estimating lighting usage in nonresidential buildings that was first presented at the 2011 IEPEC conference, *"Is the Customer Always Right? Two Cost-Effective Methods for Determining Lighting Usage in Commercial Buildings"* and expands upon those findings by including additional logger data that were collected for three impact evaluations prepared by Itron, Inc. for the California Public Utilities Commission – *2006-2008 Small Commercial Contract Group Direct Impact Evaluation Report* (Sm Com)[1], *2010-2012 Nonresidential Downstream Lighting Impact Evaluation* (NRL)[2] and *2010-2012 LED Impact Evaluation* (LED)[3]. The primary purpose of those studies was to evaluate the California investor owned utilities' energy efficiency claims for each of the program periods detailed above. Each of these evaluations involved an extensive statewide phone survey effort and on-site verification as well as time-of-use data collection for several high impact lighting measures, including CFLs, LEDs and linear technologies installed in nonresidential buildings.

Data Sources

The three main sources of on-site data that were used in this paper from the evaluations detailed above were participant business hours, participant self-reported lighting usage and lighting logger data. Participant business hours were collected as part of the initial phone survey and were confirmed by an auditor at the time of the on-site visit. In order to capture any variability in business hour operations throughout the year, the auditor not only collected the open and close time for each day of the week, but they also captured any seasonal operations and holiday schedules.

[1] The Small Com Report can be found at www.CALMAC.org. Study ID: CPU0019.01.

[2] The NRL Report can be found at www.CALMAC.org. Study ID: CPU0078.01.

[3] The LED Report can be found at www.CALMAC.org. Study ID: CPU0101.01.

Self-reported lighting usage was gathered at the time of the on-site visit. Since different activity areas[4] within a building generally have different lighting usage schedules, the site contact was asked to estimate the operating schedules for each of the activity areas where rebated measures were installed. The site contact was the individual who met with the surveyor onsite and, typically, was most knowledge about the facility's operations. These self-reported operating hours were collected as the percent of time "ON" per hour for each hour in each day of the week.

The time-of-use data were obtained through the installation of lighting loggers. A technical description of the lighting loggers and the installation/extraction procedures can be found in the NRL Report, Appendix G. Lighting loggers using optical sensors were the predominant type used for these studies, however, when lighting was not accessible, logging was done at the electrical panel where circuit amperage could be collected in order to develop lighting load shapes. As part of the on-site visit, surveyors attempted to log every representative activity area where rebated measures were installed. These loggers were generally in the field for anywhere from four weeks to one year.

Processing of Data

After the loggers were extracted, the data was processed into a percent "ON" per hour format such that the actual lighting usage for each activity area could be compared to the business and self-reported hours of operation. Figure 1 provides a site-specific example of those comparisons. The figure presents the average logger data collected for a typical weekday in the office area of an office building. The vertical axis represents the percent "ON" per hour for that day. The business hours have a value of one when the office building is open and a value of zero during closed hours. Likewise, the site contact self-reported that the lighting within the office area was "ON" eighty percent of the time throughout the open hours.

[4] Activity areas are defined as areas within the facility that have different occupancy and usage patterns. For example, the restroom(s) in a retail establishment may have a different usage pattern throughout business hours than the retail sales area.

FIGURE 1. ACTUAL, SELF-REPORTED LIGHTING USAGE AND BUSINESS HOURS FOR A LOGGER MONITORING AN OFFICE

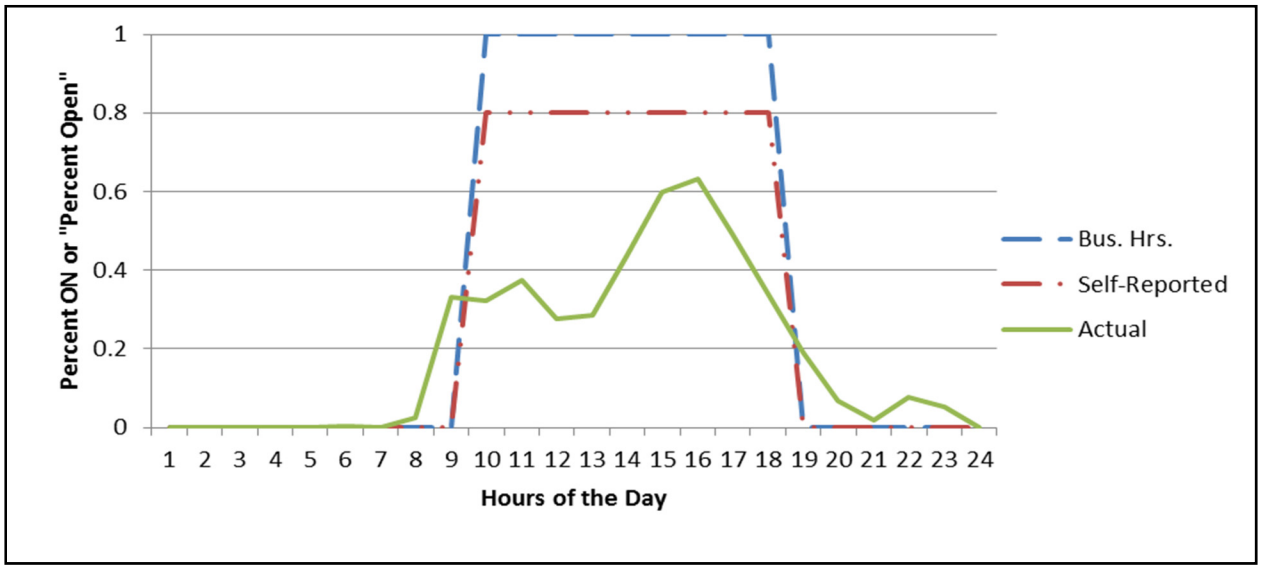


Figure 1 reveals a few important distinctions that, ultimately, represent the motivation behind this analysis. The first is that business hours may not be a reliable proxy to use in developing usage shapes and lighting load impacts. Customer self-reported lighting usage, which was garnered from the on-site visit, is 20% less than business hour estimates throughout the open period. The second is that actual lighting usage, which was garnered from monitoring data, is much less than both business hour and self-report estimates throughout open hours and there is significant hourly variability throughout that time frame. The third is that business hours and self-reports (in this case) do not account for any lighting usage throughout time periods prior to open or after close.

However, the intent of this analysis was not to accurately predict lighting usage at a single site, but rather for a large sample of similar technologies, building types and space types. In order to aggregate these adjustments and usage rates, logger data was compared to the business hours of the facility and each self-reported schedule at the facility. As mentioned above, for each hour in each day, four usage periods were generated for each facility – Open, Open Shoulder, Closed Shoulder and Closed. The actual and self-reported usage rates were then calculated for each logger by use period within the site and each logger was aggregated to a site-activity area level by measure. This aggregation only occurred when there was more than one logger installed in similar space types. The aggregation from individual loggers to activity areas was done based on the number of lamps that each logger was monitoring.

Results

Two sets of data were generated from the analysis detailed above – usage rates and adjustment factors. The results from the usage rates can be applied by knowing business operating hours, building type and activity areas and, in the case of the adjustment factors, by knowing the customer self-reported operating schedules which is typically gathered from on-site data collection.

Business Hour Rates

The business hour rates represent the actual average usage found in the logger sample for each use period by technology, building type and activity area. The usage rate represents a constant factor than can be applied to all hours within each use period and includes data from normal operation schedules as well as seasonal operations, where applicable. If a participant had more than one business operating schedule and logger data was collected during those times, the single hourly average usage rate for that logger (for each use period) was developed by weighting the number of days in the year represented in each schedule. Each individual logger was then weighted by the total number of lamps represented by the logger along with the total number of hours associated with each use period.

Table 1 and Table 2 present the results from that aggregation. Building type-activity area combinations for which at least 6 sites were monitored are included in these tables. The "Other" building type and "Other Miscellaneous" activity area represent all the unique building type or building type-space types where there were less than 6 sites represented in the sample.

Self-Report Adjustment Factors

The adjustment factor represents the actual monitored usage divided by the self-reported use. Again, these ratios were generated at the technology, building type and activity area level much like the business hour rates, but are applied only for the open period. The reason why adjustment factors were not developed for the shoulder and closed periods is that self-reported usage was often claimed to be zero during these periods. A zero value cannot be adjusted by a multiplicative factor, therefore a constant factor is more appropriate when analyzing the closed and shoulder periods.

Table 1 and Table 2 present the results associated with the adjustment factor analysis. The self-reported usage can then be multiplied by the adjustment factor to generate a proxy percent "ON" value throughout the open hours by technology, building type and activity area. Also presented are the averages by technology and building type alone.

TABLE 1: SELF-REPORTED ADJUSTMENT FACTORS – NON-LINEAR FLUORESCENT

Building Type	Activity Area	Number of Sites	Self-Reported Adjustment		Business Hour Usage Rates		
			Self-Reported Usage	Adjustment Factor	Open Shoulder	Closed Shoulder	Closed
Assembly	Classroom	8	9%	0.53	0.00	0.03	0.01
	Dining	15	57%	0.88	0.25	0.34	0.16
	HallwayLobby	67	69%	0.87	0.35	0.32	0.16
	Kitchen/Break Room	15	34%	0.58	0.14	0.15	0.06
	Office	28	67%	0.53	0.07	0.14	0.05
	OtherMisc	34	58%	0.85	0.18	0.23	0.10
	Recreation	16	39%	0.40	0.05	0.10	0.04
	Religious Worship	31	25%	0.64	0.04	0.09	0.03
	Restrooms	53	35%	0.84	0.18	0.23	0.11
	Storage	38	27%	0.88	0.11	0.11	0.05
	All	**119**	**50%**	**0.79**	**0.17**	**0.21**	**0.09**
Education – Primary/Secondary	OtherMisc	15	70%	0.68	0.04	0.14	0.04
	Restrooms	17	38%	0.97	0.06	0.09	0.03
	Storage	6	28%	0.34	0.02	0.04	0.02
	All	**26**	**60%**	**0.71**	**0.05**	**0.12**	**0.04**
Grocery	OtherMisc	7	70%	0.98	0.64	0.13	0.04
	Storage	6	36%	1.54	0.10	0.10	0.02
	All	**9**	**56%**	**1.13**	**0.43**	**0.12**	**0.04**
Health/Medical-Clinic	Comm/Ind Work	6	36%	0.12	0.00	0.01	0.00
	HallwayLobby	47	82%	0.79	0.29	0.36	0.15
	Kitchen/Break Room	8	43%	0.95	0.75	0.82	0.21
	Office	28	85%	0.49	0.11	0.19	0.03
	OtherMisc	12	55%	0.26	0.04	0.11	0.03
	Restrooms	32	15%	1.04	0.03	0.05	0.01
	Storage	13	9%	3.82	0.06	0.05	0.05
	All	**77**	**52%**	**0.42**	**0.24**	**0.30**	**0.10**
Lodging	Comm/Ind Work	13	28%	1.14	0.05	0.01	0.01
	Dining	10	70%	0.91	0.06	0.18	0.07
	Guest Rooms	93	34%	0.24	0.10	0.05	0.07
	HallwayLobby	55	81%	0.87	0.21	0.19	0.25
	Kitchen/Break Room	12	51%	0.67	0.40	0.27	0.13
	Office	13	81%	0.42	0.05	0.09	0.07
	OtherMisc	13	46%	1.18	0.02	0.06	0.09
	Restrooms	39	32%	0.22	0.16	0.15	0.09
	Storage	13	27%	0.70	0.43	0.22	0.14
	All	**109**	**38%**	**0.36**	**0.11**	**0.08**	**0.08**
Office – Large	HallwayLobby	21	86%	0.85	0.28	0.69	0.42

Building Type	Activity Area	Number of Sites	Self-Reported Adjustment		Business Hour Usage Rates		
			Self-Reported Usage	Adjustment Factor	Open Shoulder	Closed Shoulder	Closed
	Office	6	90%	0.69	0.34	0.44	0.25
	OtherMisc	8	41%	0.68	0.05	0.15	0.08
	Restrooms	11	30%	1.82	0.24	0.37	0.13
	All	**28**	**72%**	**0.87**	**0.26**	**0.53**	**0.31**
Office - Small	Conference Room	9	29%	0.87	0.06	0.11	0.01
	HallwayLobby	47	73%	0.76	0.29	0.33	0.15
	Kitchen/Break Room	12	44%	0.85	0.06	0.08	0.03
	Office	39	82%	0.76	0.07	0.25	0.03
	OtherMisc	13	50%	0.71	0.45	0.17	0.28
	Restrooms	90	19%	0.93	0.06	0.08	0.03
	Storage	22	33%	0.66	0.13	0.14	0.03
	All	**151**	**55%**	**0.77**	**0.16**	**0.20**	**0.08**
Other	OtherMisc	22	54%	0.83	0.24	0.24	0.37
	All	**22**	**54%**	**0.83**	**0.24**	**0.24**	**0.37**
Other Industrial	HallwayLobby	14	88%	0.82	0.13	0.21	0.04
	Office	11	81%	0.57	0.03	0.09	0.04
	OtherMisc	9	48%	0.74	0.19	0.19	0.09
	Restrooms	29	13%	1.32	0.08	0.04	0.01
	Storage	7	25%	0.49	0.06	0.06	0.02
	All	**49**	**63%**	**0.73**	**0.09**	**0.12**	**0.04**
Restaurant	Dining	101	87%	0.91	0.24	0.32	0.06
	HallwayLobby	43	82%	0.80	0.43	0.38	0.29
	Kitchen/Break Room	33	93%	0.90	0.49	0.33	0.11
	Office	16	35%	1.16	0.29	0.27	0.12
	OtherMisc	8	62%	0.92	0.39	0.23	0.12
	Restrooms	70	52%	0.98	0.31	0.31	0.14
	RetailSales	10	94%	0.80	0.40	0.52	0.31
	Storage	54	42%	1.11	0.28	0.19	0.09
	All	**170**	**82%**	**0.90**	**0.30**	**0.34**	**0.12**
Retail – Large	Office	4	97%	0.98	0.61	0.13	0.03
	OtherMisc	6	90%	0.96	0.39	0.51	0.27
	Restrooms	13	35%	1.35	0.25	0.26	0.13
	RetailSales	23	95%	1.02	0.20	0.10	0.02
	Storage	8	33%	0.25	0.07	0.05	0.06
	All	**39**	**95%**	**1.02**	**0.20**	**0.10**	**0.02**
Retail – Small	Auto Repair Workshop	6	80%	0.63	0.19	0.29	0.15

Building Type	Activity Area	Number of Sites	Self-Reported Adjustment		Business Hour Usage Rates		
			Self-Reported Usage	Adjustment Factor	Open Shoulder	Closed Shoulder	Closed
	Comm/Ind Work	9	80%	0.82	0.16	0.06	0.02
	HallwayLobby	23	85%	0.63	0.30	0.28	0.17
	Kitchen/Break Room	9	40%	0.62	0.12	0.13	0.09
	Office	28	64%	1.19	0.39	0.37	0.28
	OtherMisc	14	72%	0.58	0.15	0.19	0.02
	Restrooms	126	15%	1.16	0.05	0.06	0.03
	RetailSales	98	87%	0.98	0.31	0.19	0.09
	Services	9	96%	0.91	0.34	0.43	0.17
	All	**227**	**79%**	**0.96**	**0.27**	**0.19**	**0.10**
Warehouse	OtherMisc	11	83%	0.72	0.10	0.21	0.07
	Restrooms	15	6%	0.90	0.01	0.01	0.00
	All	**24**	**62%**	**0.73**	**0.08**	**0.17**	**0.06**

The results from the adjustment factor analysis for non-linear technologies (CFLs and LEDs) reveal that site contacts generally over-estimate lighting usage in their facilities for most building types. For example, the average overall self-reported lighting usage throughout open hours in office – small was 55%. However, the overall adjustment factor is .77, which reveals that actual usage, on average, was roughly 25 % lower.[5] For retail – large, site contacts were generally accurate in predicting usage throughout open hours (1.02 adjustment factor). This was driven predominantly by an almost identical self-report to actual in retail sales areas.

The results from the usage rate analysis reveal that facilities experience measured lighting loads throughout closed hours. The most significant loads come during the two hours prior to opening and two hours after close (the shoulder periods). For example, the average usage for restaurants for each hour in the open and closed shoulder period was .30 and .34, respectively. Likewise, the usage rate throughout all other closed hours was .12 with the most significant load being generated in retail sales areas and hallways/lobbies.

[5] A 42% actual divided by the 55% self-report yields an adjustment factor of .77 throughout open hours.

TABLE 2: SELF-REPORTED ADJUSTMENT FACTORS – LINEAR FLUORESCENT

Building Type	Activity Area	Number of Sites	Self-Reported Adjustment		Business Hour Usage Rates		
			Self-Reported Usage	Adjustment Factor	Open Shoulder	Closed Shoulder	Closed
Assembly	Classroom	30	64%	0.47	0.05	0.12	0.02
	Conference Room	7	55%	0.55	0.14	0.27	0.06
	Dining	14	63%	0.64	0.27	0.11	0.06
	HallwayLobby	32	91%	0.42	0.17	0.33	0.13
	Kitchen/Break Room	31	43%	0.83	0.18	0.22	0.07
	Office	43	66%	0.57	0.26	0.20	0.06
	OtherMisc	28	91%	0.61	0.35	0.33	0.20
	Recreation	21	75%	0.63	0.11	0.26	0.06
	Religious Worship	8	30%	0.31	0.05	0.06	0.04
	Restrooms	23	47%	1.45	0.42	0.47	0.28
	Storage	24	45%	0.78	0.37	0.36	0.15
	All	**70**	**76%**	**0.57**	**0.21**	**0.26**	**0.11**
Education – Primary/Secondary	Classroom	48	76%	0.67	0.03	0.14	0.02
	HallwayLobby	24	78%	1.00	0.22	0.45	0.16
	Kitchen/Break Room	22	62%	0.98	0.22	0.26	0.07
	Office	32	76%	0.91	0.13	0.25	0.06
	OtherMisc	24	76%	0.74	0.11	0.37	0.06
	Restrooms	23	46%	1.24	0.10	0.22	0.04
	Storage	11	10%	1.49	0.02	0.12	0.02
	All	**59**	**74%**	**0.72**	**0.07**	**0.20**	**0.04**
Grocery	OtherMisc	6	84%	0.71	0.09	0.29	0.09
	RetailSales	14	95%	1.01	0.54	0.31	0.16
	Storage	7	73%	0.97	0.33	0.22	0.15
	All	**14**	**91%**	**0.96**	**0.45**	**0.30**	**0.15**
Health/Medical-Clinic	Comm/Ind Work	15	81%	0.79	0.06	0.30	0.04
	HallwayLobby	40	91%	0.89	0.24	0.46	0.18
	Kitchen/Break Room	19	68%	0.87	0.21	0.37	0.05
	Office	44	69%	0.83	0.17	0.29	0.06
	OtherMisc	17	77%	0.52	0.05	0.27	0.01
	Patient Rooms	10	28%	0.51	0.06	0.20	0.02
	Restrooms	15	22%	1.38	0.07	0.17	0.06
	Storage	18	32%	1.18	0.02	0.06	0.02
	All	**54**	**75%**	**0.73**	**0.15**	**0.32**	**0.08**
Laundry	OtherMisc	7	100%	0.93	0.54	0.52	0.34
	All	**7**	**100%**	**0.93**	**0.54**	**0.52**	**0.34**
Office - Large	Comm/Ind Work	6	88%	0.74	0.37	0.54	0.24
	Conference Room	13	33%	0.92	0.04	0.09	0.04
	HallwayLobby	16	94%	0.85	0.43	0.48	0.26
	Kitchen/Break Room	12	82%	0.93	0.36	0.52	0.23
	Office	22	90%	0.77	0.42	0.55	0.25
	OtherMisc	10	44%	1.00	0.32	0.38	0.27

Building Type	Activity Area	Number of Sites	Self-Reported Adjustment		Business Hour Usage Rates		
			Self-Reported Usage	Adjustment Factor	Open Shoulder	Closed Shoulder	Closed
	Storage	11	55%	0.99	0.10	0.12	0.11
	All	**26**	**82%**	**0.80**	**0.39**	**0.51**	**0.24**
Office - Small	Comm/Ind Work	17	79%	0.77	0.14	0.22	0.10
	Conference Room	22	58%	0.80	0.17	0.17	0.02
	Copy Room	11	80%	0.96	0.24	0.16	0.01
	HallwayLobby	52	89%	0.84	0.19	0.21	0.05
	Kitchen/Break Room	38	69%	0.84	0.17	0.23	0.04
	Office	92	82%	0.76	0.14	0.24	0.05
	OtherMisc	16	75%	0.81	0.36	0.22	0.15
	Restrooms	13	40%	0.84	0.05	0.14	0.05
	Storage	34	52%	0.84	0.13	0.10	0.04
	All	**105**	**78%**	**0.79**	**0.16**	**0.22**	**0.05**
Other	OtherMisc	12	40%	1.65	0.18	0.14	0.02
	All	**12**	**40%**	**1.65**	**0.18**	**0.14**	**0.02**
Other Industrial	Auto Repair Workshop	7	92%	0.99	0.47	0.07	0.06
	Comm/Ind Work	83	85%	0.85	0.28	0.32	0.14
	Conference Room	16	9%	0.81	0.00	0.02	0.01
	HallwayLobby	40	83%	0.76	0.33	0.36	0.23
	Kitchen/Break Room	25	56%	1.34	0.20	0.25	0.06
	Office	66	73%	0.90	0.12	0.18	0.05
	OtherMisc	20	66%	0.94	0.10	0.38	0.09
	Restrooms	23	14%	3.27	0.15	0.15	0.08
	RetailSales	6	84%	0.95	0.35	0.30	0.22
	Storage	53	74%	0.88	0.18	0.18	0.08
	All	**133**	**75%**	**0.90**	**0.23**	**0.27**	**0.11**
Restaurant	Dining	19	79%	0.82	0.15	0.20	0.04
	Kitchen/Break Room	21	91%	0.92	0.60	0.57	0.22
	OtherMisc	13	93%	0.90	0.26	0.26	0.03
	Storage	11	79%	0.89	0.52	0.30	0.05
	All	**29**	**85%**	**0.88**	**0.33**	**0.33**	**0.10**
Retail – Large	Auto Repair Workshop	7	78%	1.04	0.50	0.39	0.02
	Comm/Ind Work	6	97%	0.94	0.49	0.49	0.29
	Conference Room	7	18%	1.41	0.05	0.09	0.02
	HallwayLobby	11	96%	0.95	0.77	0.53	0.17
	Kitchen/Break Room	12	80%	0.95	0.47	0.45	0.29
	Office	25	80%	0.96	0.38	0.43	0.14
	OtherMisc	9	93%	0.73	0.58	0.39	0.21
	Restrooms	11	74%	1.28	0.59	0.70	0.44
	RetailSales	32	97%	0.99	0.61	0.58	0.41
	Storage	35	94%	0.61	0.52	0.48	0.31
	All	**51**	**94%**	**0.82**	**0.56**	**0.51**	**0.31**

Building Type	Activity Area	Number of Sites	Self-Reported Adjustment		Business Hour Usage Rates		
			Self-Reported Usage	Adjustment Factor	Open Shoulder	Closed Shoulder	Closed
Retail – Small	Auto Repair Workshop	45	85%	0.88	0.13	0.29	0.03
	Comm/Ind Work	38	94%	0.91	0.25	0.30	0.09
	HallwayLobby	39	84%	0.95	0.15	0.19	0.05
	Kitchen/Break Room	33	81%	0.79	0.17	0.16	0.04
	Office	84	82%	0.84	0.10	0.16	0.01
	OtherMisc	23	84%	0.89	0.17	0.13	0.03
	Restrooms	19	24%	0.91	0.05	0.12	0.02
	RetailSales	104	96%	0.96	0.15	0.15	0.04
	Services	15	93%	0.91	0.27	0.33	0.09
	Storage	75	68%	1.03	0.16	0.22	0.06
	All	**208**	**88%**	**0.93**	**0.16**	**0.20**	**0.04**
Warehouse	Comm/Ind Work	14	91%	0.76	0.24	0.14	0.06
	Conference Room	12	30%	1.04	0.02	0.05	0.01
	HallwayLobby	20	70%	0.73	0.26	0.10	0.04
	Kitchen/Break Room	17	57%	0.90	0.19	0.17	0.05
	Office	44	85%	0.69	0.18	0.13	0.06
	OtherMisc	22	45%	0.76	0.05	0.08	0.02
	Restrooms	17	23%	1.52	0.13	0.13	0.04
	Storage	58	71%	0.83	0.21	0.20	0.06
	All	**87**	**73%**	**0.78**	**0.19**	**0.16**	**0.05**

The results from the adjustment factor analysis for linear technologies yield similar results to the non-linear lighting analysis for some building types and different results for others. The similarities and differences result from both the self-reported lighting usage as well as the accuracy of the self-report. For example, the self-reported usage for non-linear and linear technologies throughout open hours were 79% and 88%, respectively. However, the adjustment factors for each technology (.96 and .93) reveal that sit contacts over-estimated usage by a similar margin.

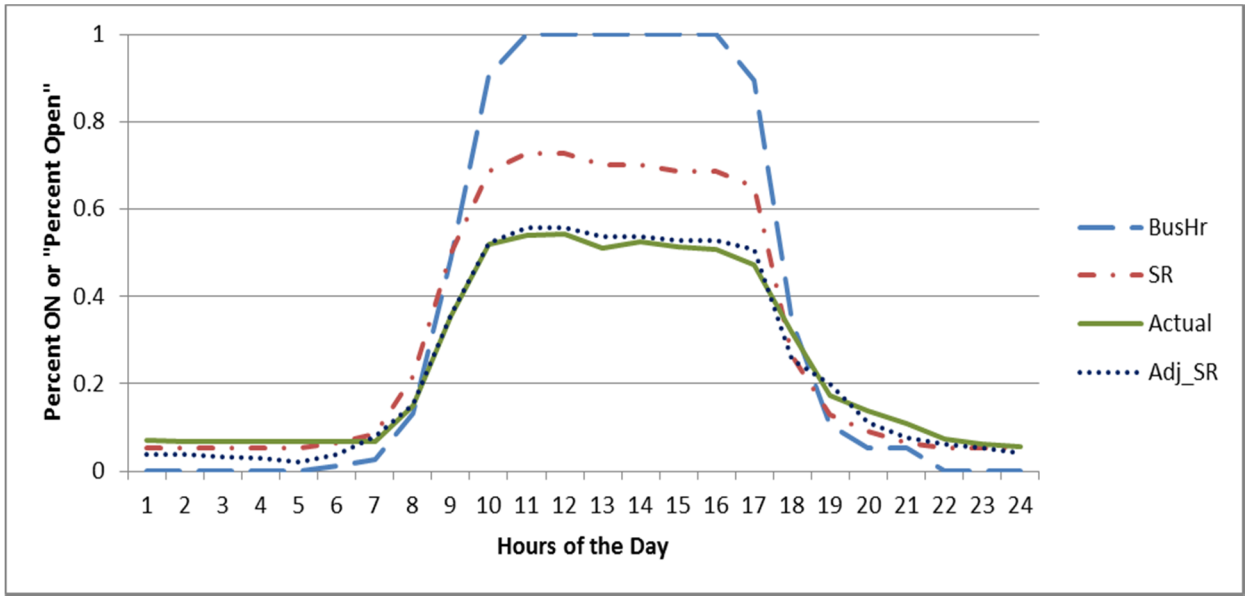
The results from the business factor analysis for linear technologies also reveal that facilities experience measured lighting loads throughout closed hours. For some building types like retail – large and office – large, those loads are quite substantial.

Application of Results

By applying the adjustment factors to the open time period and the usage rates to the closed and shoulder time periods, 8,760 load shapes can be developed at the measure and activity area level for each building type. As mentioned above, these estimation techniques are meant to be applied to a large sample of sites and are not meant to accurately predict usage at a single site. For the adjustment factors and usage rates,

since business hours can vary considerably from one site to another, they are applied to each site in the sample individually and then aggregated together. Figure 2 provides an example of this for a non-linear technology (CFL or LED) installed in an office area of an office building. An adjustment factor of .76 was multiplied by the self-reported usage during open hours (from Table 1) and business rates (from Table 1) were applied to the closed and shoulder period for each site. These individual site profiles were then aggregated together to create a population-wide estimate of usage.

FIGURE 2. POPULATION BUSINESS HOURS, SELF-REPORT, ACTUAL USAGE AND SELF-REPORT ADJUSTMENT/ USAGE RATE



Conclusion

These results will provide evaluators with two cost effective methods for obtaining accurate lighting usage estimates within nonresidential buildings. Evaluators can apply these methods by using data collected throughout the on-site verification process. These data include the facility's business hour schedule and the self-reported lighting schedule for each activity area of measure installation. Likewise, evaluators can properly weight the activity area lighting load shapes to the site level by confirming the number of measure installations (by activity area). Evaluators can then apply the adjustment factors to the self-reported usage data collected on-site and apply the usage rates to the business operating hours to develop more reliable estimates of lighting load shapes. Furthermore, since these results are developed at the technology, building type, activity area and use period level, evaluators can better understand

lighting operation nuances at a much more disaggregated level than by relying simply on annual operating hour estimates.

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APPENDIX D ER/ROB ALGORITHM

ROB/NR/ER Algorithm

In order to classify an installation as being ER, there must be "a preponderance of evidence that an energy efficiency program activity induced or accelerated equipment replacement. Early retirement measures must provide justification that the existing equipment being replaced would have continued to function and perform its original design intent for a period of time in absence of the replacement."[1]

Therefore, to determine if an installation is ER we first determined if the equipment was replaced on burnout, or was approaching the end of its useful life. If the equipment would not have been able to function as intended for at least a year, the installation is classified as an ROB. If not, we then examine if the program influenced an accelerated replacement, or if the customer was likely to have replaced the equipment at roughly the same time in the absence of the program. If the customer was likely to have replaced the equipment at roughly the same time in the absence of the program, they are considered NR. If not, then the customer will be classified as ER. These two criteria are discussed separately below.

Equipment Operating Condition

If the replaced equipment was not in proper working condition and would not have continued to operate for at least one additional year, then the installation is considered to be a ROB. Using phone survey data, if any of the following four criteria were found to be true, then the existing equipment being replaced would not have continued to function and perform its original design for at least one year in absence of the replacement. Therefore, the installation is an ROB:

1. Fifty percent or more of the equipment was broken or not working prior to the installation as reported by the customer. This criteria contradicts the requirement that the equipment be in proper working condition. The following survey question is used to determine this factor:

   LI24: "Approximately what percentage of the lighting equipment that was removed and replaced was broken or not working prior to installing &Prgm_LT1_Desc?"

2. The equipment was in poor condition, as reported by the customer. This criteria contradicts the requirement that the equipment be in proper working condition. The following survey question is used to determine this factor:

[1] From CPUC guidance document "Project Basis (RET, ROB, etc), EUL/RUL Definitions, & Preponderance of Evidence" dated 1/29/14.

LI23: "How would you describe the condition of the lighting equipment that was removed and replaced as a result of the installation of &Prgm_LT1_Desc? Would you say it was…"

1 In poor condition
2 Fair condition, or
3 Good condition

3. The current age of the equipment must was within one year of the EUL, as reported by the customer. This criteria contradicts the requirement that the equipment would have continued to operate for at least one year. The following survey question is used to determine this factor:

   LI22: "Approximately how old was the equipment that were removed and replaced with &Prgm_LT1_Desc?"

   1. Less than 5 years old
   2. Between 5 and 10 years old
   3. Between 10 and 15 years old
   4. More than 15 years old

4. The equipment would not have lasted more than one year before failing and requiring replacement, as reported by the customer. This criteria contradicts the requirement that the equipment would have continued to operate for at least one year. The following survey question is used to determine this factor:

   ER2: "How many more years do you think your lighting system would have gone before failing and required replacement?"[2]

Program Induced Early Retirement

If the installation was not found to be ROB, we then examine if the customer was likely to have installed the equipment in the absence of the program. If so the installation is considered to be an NR. If not, we consider this sufficient evidence that an energy efficiency program activity induced or accelerated equipment replacement and the installation is classified as ER.

For an installation to be considered NR, the respondent must state a high likelihood that they would have replaced their equipment at the same time, or within a year, in the absence of the program. Furthermore,

[2] Question ER2 was originally asked only for those with A3 = 1, and not the customers who claimed a high level of influence due to the age or condition of the old equipment. The survey was revised to ask ALL customers question ER2, as this provides value for this and other analyses discussed below. Therefore, this question will be missing for a number of respondents.

they must also provide some other evidence to support this statement, by providing a non-program factor as a reason for the installation and rate that factor as very influential in their decision to install the measure.

In order for the installation to be classified as NR, the following must be true:

1. The customer must state a high likelihood that they would have done the project at the same time (a rating of 9 or 10 for N5B), or state they definitely or probably would have replaced the existing equipment within one year of when they did (TD1 = 1 or 2):

   N5B: "If the program had not been available, what is the likelihood that you would have done this project at the same time as you did?"

   TD1: "If the program had not been available, how likely is it that you would have replaced your existing equipment within one year of when you did?"

   1. Definitely would have
   2. Probably would have
   3. 50-50 chance
   4. Probably not
   5. Definitely not

2. The customer must also provide other evidence that supports the claim that they would have replaced their equipment but failure was not imminent, by providing a non-program factor as a reason for the installation and rate that factor as very influential in their decision to install the measure.

   a. The customer must first provide a reason for installing the measure that is consistent with natural (or near term) replacement. Customers are asked the following open-ended question (A3) about reasons for participation. Reponses that would be considered to be supportive of a NR in the absence of the program are shown below:

   A3: "There are usually a number of reasons why an organization like yours decides to participate in energy efficient programs like this one by installing energy efficient lights. In your own words, can you tell me why you decided to participate in this program?"

   1 To replace old or outdated lighting equipment
   2 As part of a planned remodeling, build-out, or expansion
   5 Had process problems and were seeking a solution
   6 To improve lighting equipment performance
   8 To comply with codes set by regulatory agencies

10 To comply with company policies regarding regular lighting retrofits or remodeling

b. If the customer provides any of the above as reasons for participation, they must then rate that factor as being very important (a rating of 9-10 for various N3 questions, listed below):

N3 Now using this scale please rate the importance of each of the following in your decision to implement the MEASURE at this time.

N3a. The age or condition of the old equipment (Corresponds to A3 = 1)

N3j. Standard practice in your business/industry (Corresponds to A3 =10)

N3m. Corporate policy or guidelines (Corresponds to A3 =10)

N3o. To improve your overall quality of lighting (Corresponds to A3 = 5 or 6)

N3p. Compliance with state or federal regulations or standards such as Title 24 (Corresponds to A3 = 8)

N3r. Compliance with your organization's normal remodeling or lighting replacement practices (Corresponds to A3 = 2 or 10)

If there are factors identified in part (a) that are ranked as very important in part (b), then the installation is classified as NR; otherwise the installation as classified as an ER.

APPENDIX E PHONE SURVEY BANNERS

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<FM050> What is the main business activity at this facility?									
Offices (non-medical)	12.48	27.49	4.19	6.49	18.66	1.00	9.32	18.15	14.72
Restaurant / Food Service	8.93	8.08	10.01	11.09	7.35	4.20	0.00	4.99	5.02
Food Store (grocery / liquor / convenience)	2.20	1.68	2.45	0.16	2.49	11.32	0.00	0.00	4.16
Agricultural (farms, greenhouses)	1.91	3.25	1.14	0.00	3.10	5.48	0.00	0.00	0.00
Retail Stores	14.66	14.97	8.32	11.70	31.16	27.88	42.81	6.00	3.16
Warehouse	1.69	0.00	1.66	0.12	4.65	4.80	11.02	5.54	1.31
Health Care	4.38	2.75	6.31	5.03	0.00	2.16	11.61	17.60	2.64
Education	5.05	2.26	9.16	1.39	1.99	0.00	0.00	20.31	5.56
Lodging (hotel / rooms)	28.07	31.48	37.15	27.49	3.82	0.00	0.56	0.00	35.17
Public Assembly (church, fitness, theatre, library, museum, convention)	8.99	2.06	13.65	13.40	6.04	1.91	2.29	0.00	2.41
Services (hair, nail, massage, spa, gas, repair)	2.78	0.15	4.15	2.83	3.21	4.02	2.29	1.38	0.32
Industrial (food processing plant, manufacturing)	2.99	1.11	1.57	4.00	4.39	24.85	5.91	9.50	7.40
Laundry (coin operated, commercial laundry facility, dry cleaner)	1.18	0.02	0.11	2.43	3.97	4.87	7.33	5.00	0.32
Condo Assoc. / Apartment Mgr. (garden style, mobile home park, highrise, townhouse)	0.35	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Public Service (fire, police, postal, military)	2.52	0.02	0.03	11.93	5.21	4.14	6.85	9.78	2.63
Parking Garage / Storage company	0.33	0.00	0.00	0.00	2.42	0.00	0.00	0.00	0.00
Other	1.49	3.34	0.10	1.94	1.54	3.39	0.00	1.75	15.17
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<FM050A> Which of the following types of offices best describes this facility?									
Administration and management	29.50	15.08	23.69	79.66	93.34	0.00	10.72	38.46	94.25
Financial / Legal	13.42	11.88	27.47	2.00	0.00	0.00	89.28	0.00	0.00
Insurance/Real Estate	21.22	17.42	47.41	9.77	0.00	100.00	0.00	0.00	0.00
Data Processing/Computer Center	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.75
Mixed-Use/Multi-tenant	1.12	0.49	0.00	0.00	6.66	0.00	0.00	0.00	0.00
Software Development	21.29	35.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Government Services	0.66	0.00	1.43	8.57	0.00	0.00	0.00	0.00	0.00
Other	12.77	20.06	0.00	0.00	0.00	0.00	0.00	61.54	0.00
n	*44*	*12*	*14*	*8*	*2*	*1*	*2*	*3*	*2*
<FM050B> Which of the following types of restaurants or food service best describes this facility?									
Fast Food or Self Service	20.97	41.02	0.00	7.84	82.52	0.00	0.00	0.00	100.00
Specialty/Novelty Food Service	8.72	0.00	8.92	12.90	17.48	37.73	0.00	41.69	0.00
Table Service	66.56	45.90	91.08	74.54	0.00	62.27	0.00	58.31	0.00
Other	3.74	13.08	0.00	4.72	0.00	0.00	0.00	0.00	0.00
n	*40*	*8*	*14*	*11*	*2*	*2*	*0*	*2*	*1*
<FM050C> Which of the following types of food stores best describes this facility?									
Supermarkets	14.60	0.00	0.00	0.00	0.00	95.17	0.00	0.00	0.00
Small General Grocery	20.78	0.00	32.51	0.00	0.00	4.83	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Specialty/Ethnic Grocery/Deli	1.08	69.46	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Convenience Store	62.28	22.90	67.49	7.96	100.00	0.00	0.00	0.00	0.00
Liquor Store	1.26	7.63	0.00	92.04	0.00	0.00	0.00	0.00	0.00
n	*15*	*3*	*5*	*2*	*1*	*3*	*0*	*0*	*1*
<FM050D> What type of agricultural facility is this?									
Commercial Farm	100.00	100.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
n	*2*	*1*	*0*	*0*	*0*	*1*	*0*	*0*	*0*
<FM050E> Which of the following types of retail stores best describes this facility?									
Department / Variety Store	41.78	32.22	66.67	47.88	0.00	0.00	0.00	27.05	0.00
Retail Warehouse/Club	3.16	4.07	0.00	10.84	0.00	0.00	13.91	11.89	9.81
Shop in Strip Mall	22.21	13.52	28.04	6.59	23.82	26.40	57.96	13.13	9.81
Auto / Truck / Motorcycle Sales	8.74	0.00	0.18	0.47	76.18	0.00	0.00	0.00	0.00
Art Gallery	6.93	28.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Facility is a Mall/Strip Mall	0.04	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.00
Other	17.14	22.16	5.11	33.94	0.00	73.60	28.13	47.92	80.37
n	*75*	*22*	*18*	*14*	*2*	*3*	*6*	*7*	*3*
<FM050F> Which of the following types of warehouses best describes this facility?									
Unconditioned Warehouse, High Bay (lighting higher than 13 ft)	44.56	0.00	0.00	100.00	0.00	0.00	86.83	0.00	0.00
Unconditioned Warehouse, Low Bay	5.62	0.00	20.14	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Conditioned Warehouse, High Bay (lighting higher than 13 ft)	6.43	0.00	0.00	0.00	0.00	0.00	13.17	0.00	0.00
Shipping / Distribution Center	29.09	0.00	44.48	0.00	0.00	0.00	0.00	83.37	0.00
Garage / Parking / Storage for Commercial Fleet	9.88	0.00	35.38	0.00	0.00	0.00	0.00	0.00	0.00
Other	3.32	0.00	0.00	0.00	0.00	0.00	0.00	16.63	0.00
Don't Know	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
n	*11*	*0*	*4*	*1*	*0*	*0*	*2*	*3*	*1*
<FM050G> Which of the following types of health care centers best describes this facility?									
Hospital	1.84	33.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nursing Home	11.09	0.00	6.86	75.19	0.00	0.00	0.00	0.00	0.00
Medical/Dental Office	56.72	27.49	70.88	24.81	0.00	0.00	0.00	0.00	100.00
Clinic/Outpatient Care	0.40	7.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medical/Dental Lab	16.77	10.46	18.16	0.00	0.00	100.00	0.00	0.00	0.00
Doctor's Office	7.04	0.00	1.87	0.00	0.00	0.00	97.75	0.00	0.00
Dentist's Office	1.67	0.00	2.23	0.00	0.00	0.00	0.00	0.00	0.00
Veterinary Hospital/Clinic	0.60	0.00	0.00	0.00	0.00	0.00	2.25	14.90	0.00
Other	3.86	21.50	0.00	0.00	0.00	0.00	0.00	85.10	0.00
n	*22*	*5*	*8*	*3*	*0*	*1*	*2*	*2*	*1*
<FM050H> Which of the following types of educational centers best describes this facility?									
Daycare or Preschool	14.64	0.00	0.00	95.71	0.00	0.00	0.00	0.00	0.00
Elementary School	26.95	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Middle / Secondary School	0.61	1.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
College or University	57.02	98.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Instructional Studio (dance / music lessons, martial arts)	0.66	0.00	0.00	4.29	0.00	0.00	0.00	0.00	0.00
Other	0.13	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*7*	*2*	*1*	*2*	*2*	*0*	*0*	*0*	*0*
<FM050I> Which of the following types of lodging best describes this facility?									
Hotel	59.62	74.40	49.35	75.42	0.00	0.00	0.00	0.00	0.00
Motel	13.08	22.38	6.15	0.00	100.00	0.00	100.00	0.00	100.00
Resort	1.79	0.00	0.00	14.65	0.00	0.00	0.00	0.00	0.00
Bed & Breakfast	2.28	3.22	0.00	9.93	0.00	0.00	0.00	0.00	0.00
RESIDENTIAL Hotel/Motel	23.23	0.00	44.50	0.00	0.00	0.00	0.00	0.00	0.00
n	*35*	*22*	*5*	*4*	*2*	*0*	*1*	*0*	*1*
<FM050J> Which of the following types of public assembly buildings best describes this facility?									
Religious Assembly (worship only)	54.84	0.00	51.52	82.77	68.26	100.00	0.00	0.00	0.00
Religious Assembly (mixed use)	36.28	0.00	48.48	17.23	31.74	0.00	0.00	0.00	100.00
Theater / Performing Arts Venue	1.03	7.33	0.00	0.00	0.00	0.00	100.00	0.00	0.00
Library / Museum	7.55	89.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.30	3.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*24*	*3*	*11*	*5*	*2*	*1*	*1*	*0*	*1*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<FM050K> Which of the following types of service buildings best describes this facility?									
Hair Salon	25.51	49.55	22.72	73.60	0.00	0.00	49.76	38.07	0.00
Nail Salon	31.82	35.84	45.71	14.92	0.00	0.00	12.44	0.00	0.00
Gas Station / Auto Repair	22.72	0.00	5.81	0.37	96.38	75.19	37.80	30.96	0.00
Copy Center / Printing	0.03	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00
Package Delivery (FedEx / UPS / DHL)	1.14	0.00	0.00	0.00	0.00	24.81	0.00	0.00	0.00
Amusement (mini-golf / go-carts / skating / bowling)	10.13	3.51	15.77	0.00	0.00	0.00	0.00	0.00	0.00
Pet Care / Grooming	4.76	0.00	7.46	0.00	0.00	0.00	0.00	0.00	0.00
Cemetery / Mortuary / Crematorium	1.19	0.00	1.86	0.00	0.00	0.00	0.00	0.00	0.00
Upholstery	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.63
Other	2.70	11.11	0.67	10.91	3.62	0.00	0.00	30.96	80.37
n	*42*	*6*	*11*	*12*	*2*	*3*	*3*	*3*	*2*
<FM050L> Which of the following types of buildings best describes this facility?									
Assembly / Light Manufacturing	10.23	19.09	100.00	0.00	0.00	0.00	92.87	0.00	100.00
Industrial Process	56.45	80.91	0.00	0.00	91.79	0.00	0.00	90.04	0.00
Machine Shop	28.19	0.00	0.00	0.00	0.00	100.00	7.13	0.00	0.00
Pharmaceutical Production/Manufacturing	0.19	0.00	0.00	0.00	0.00	0.00	0.00	9.96	0.00
Other	4.94	0.00	0.00	100.00	8.21	0.00	0.00	0.00	0.00
n	*19*	*6*	*2*	*1*	*3*	*2*	*2*	*2*	*1*
<FM050M> What type of laundry facility is this?									

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Coin Operated	68.46	0.00	0.00	0.00	0.00	33.58	100.00	0.00	100.00
Dry Cleaners	31.55	0.00	0.00	100.00	0.00	66.42	0.00	0.00	0.00
n	*5*	*0*	*0*	*1*	*0*	*2*	*1*	*0*	*1*
<FM050N> Which of the following types of buildings best describes this facility?									
High-rise	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*1*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
<FM050O> Which of the following types of buildings best describes this facility?									
Fire station	15.28	0.00	0.00	0.00	0.00	72.63	0.00	0.00	0.00
Post office	5.76	0.00	0.00	0.00	0.00	27.37	0.00	0.00	0.00
Water/Waste Water Treatment	47.55	0.00	0.00	0.00	60.22	0.00	0.00	0.00	0.00
Public Park	31.41	0.00	0.00	0.00	39.78	0.00	0.00	0.00	0.00
n	*5*	*0*	*0*	*0*	*2*	*3*	*0*	*0*	*0*
<HOLIDAYS> Does your facility close for any holidays during the year, and if so, which ones?									
New Year's Day	43.42	41.96	47.21	38.76	27.67	63.35	80.79	97.90	55.72
Martin Luther King Jr. Day	11.28	8.92	12.70	14.27	9.21	7.87	10.83	14.00	12.10
President's Day	12.07	12.91	10.07	18.18	8.65	13.64	28.63	14.00	17.14
Memorial Day	31.82	27.34	34.95	36.82	18.40	41.06	65.97	61.81	55.07
Independence Day (July 4th)	37.80	38.04	39.51	38.44	23.60	52.54	65.97	64.14	54.06
Labor Day	30.20	33.48	27.17	33.70	22.74	39.87	65.97	58.51	52.08

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Thanksgiving	45.99	42.79	49.47	44.57	31.58	73.65	65.97	99.45	61.42
Day After Thanksgiving	17.71	18.94	14.70	20.12	19.25	25.18	20.48	54.66	15.42
Christmas Eve	20.79	26.43	17.47	18.12	22.97	19.58	15.89	51.48	9.65
Christmas Day	46.76	40.07	51.57	44.93	32.87	75.49	86.21	98.99	61.90
Easter	1.11	0.16	2.46	0.09	0.00	0.00	0.00	0.00	0.00
Mother's Day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veteran's Day	0.09	0.16	0.00	0.06	0.00	1.13	0.00	0.00	0.00
Columbus Day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
No holiday closures	49.28	53.55	45.89	48.09	64.89	23.56	13.79	0.55	38.10
Other	0.74	0.62	1.15	0.00	0.61	0.24	0.00	0.00	0.00
Refused	0.31	0.00	0.00	2.41	0.00	0.00	0.00	0.00	0.00
Don't Know	0.41	0.62	0.00	0.26	1.63	0.00	0.00	0.00	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<CC2A> What is the total square footage at this facility?									
Less Than 1500 sq ft	7.60	7.34	8.00	13.11	1.78	4.50	13.25	4.33	6.75
Between 1500 and 5000 sq ft	16.38	11.98	8.31	27.75	34.31	26.88	38.62	27.26	21.27
Between 5000 and 10,000 sq ft	5.06	5.25	3.55	5.10	4.79	24.41	2.18	15.38	14.53
Between 10,000 and 25,000 sq ft	15.66	16.66	20.00	2.04	14.10	15.50	3.71	14.64	35.49
Between 25,000 and 50,000 sq ft	3.54	3.26	4.15	1.82	2.30	2.19	16.81	10.06	10.25
Between 50,000 and 75,000 sq ft	2.75	2.59	2.09	0.00	8.81	0.00	0.00	0.46	0.00
Between 75,000 and 100,000 sq ft	0.95	1.42	1.14	0.20	0.00	0.00	0.00	14.98	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Over 100,000 sq ft (Ag area)	7.65	25.49	0.00	5.24	3.10	0.00	0.00	0.00	0.00
Don't Know	40.42	26.00	52.76	44.74	30.81	26.52	25.44	12.88	11.71
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<CC2B> Would you say that the floor area is...									
Less than 1500 sq ft	2.74	0.48	4.20	0.82	0.00	0.00	18.71	11.06	0.00
Between 1500 and 5000 sq ft	6.96	1.85	5.65	13.37	3.35	55.58	6.63	23.34	34.04
Between 5000 and 10,000 sq ft	11.42	20.77	12.69	2.62	4.74	0.00	1.09	6.62	45.38
Between 10,000 and 25,000 sq ft	7.21	19.69	6.06	0.65	2.56	10.25	0.00	0.00	0.00
Between 25,000 and 50,000 sq ft	5.37	18.64	2.07	0.00	10.96	0.00	0.00	0.00	0.00
Between 50,000 and 75,000 sq ft	5.93	1.46	1.80	19.90	18.28	0.00	0.00	0.00	0.00
Between 75,000 and 100,000 sq ft	1.92	0.48	0.00	7.46	0.00	34.17	0.00	51.34	0.00
Over 100,000 sq ft (Ag area)	11.70	24.55	3.31	19.05	30.15	0.00	0.00	0.00	20.58
REFUSED	0.01	0.00	0.00	0.00	0.00	0.00	0.00	3.58	0.00
DON'T KNOW	46.74	12.08	64.21	36.14	29.96	0.00	73.56	4.07	0.00
n	*146*	*32*	*43*	*19*	*14*	*12*	*10*	*10*	*6*
<CC2C> Is the entire floor area of this facility heated or cooled?									
YES	79.09	82.71	85.93	72.12	59.24	74.24	69.94	78.14	70.98
NO	20.22	17.29	14.07	27.88	35.55	25.76	30.06	21.86	29.02
DON'T KNOW	0.70	0.00	0.00	0.00	5.21	0.00	0.00	0.00	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<CC2D> What percentage of the floor area is heated or cooled at this facility?									
0 Percent	20.84	20.33	13.70	13.65	34.62	39.97	1.87	6.81	0.00
Between 0 and 15 Percent	10.40	1.06	11.02	0.97	20.44	10.58	64.45	2.11	0.00
Between 15 and 30 Percent	12.32	0.21	22.51	12.12	9.15	18.05	4.75	80.65	14.33
Between 30 and 45 Percent	4.48	0.00	5.50	0.50	8.19	5.70	24.17	8.02	0.56
Between 45 and 60 Percent	11.40	0.87	2.60	43.15	8.71	14.93	1.87	2.40	73.63
Between 60 and 80 Percent	16.54	36.78	18.56	15.38	0.00	4.40	0.92	0.00	1.76
Between 80 and 100 Percent	5.57	22.13	0.01	0.00	2.62	1.86	0.00	0.00	1.12
100 Percent	3.30	13.50	0.00	1.81	0.00	0.00	0.00	0.00	4.07
Don't Know	15.16	5.12	26.10	12.42	16.26	4.52	1.96	0.00	4.53
n	*174*	*35*	*39*	*34*	*15*	*17*	*13*	*9*	*12*
<CC3A> Is your space heated using electricity or gas?									
Electricity	46.44	28.73	52.08	65.25	42.19	37.37	72.81	51.49	76.78
Gas	19.33	25.83	15.79	13.80	22.89	34.45	5.17	7.22	13.11
Both Gas and Electricity	28.09	42.69	23.45	17.25	27.91	26.35	12.82	22.40	8.77
Propane	1.12	0.65	2.13	0.04	0.00	0.00	0.00	0.00	0.00
No Heating	1.64	0.00	0.86	2.30	7.01	1.83	5.74	0.00	1.18
Other	0.14	0.49	0.02	0.00	0.00	0.00	0.00	0.00	0.00
REFUSED	2.18	0.00	4.82	0.29	0.00	0.00	0.59	0.00	0.16
DON'T KNOW	1.07	1.60	0.84	1.07	0.00	0.00	2.87	18.88	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
n	*525*	*128*	*126*	*94*	*32*	*46*	*31*	*37*	*31*
<G1> Which of the following natural gas equipment is present at you facility? Do you have a									
Water Heater	81.33	82.09	97.04	55.13	59.35	51.93	87.30	83.72	87.85
Gas Furnace	49.69	43.37	51.59	50.27	58.47	58.99	68.15	74.18	64.82
Gas Boiler	29.80	50.48	19.46	35.90	3.35	4.51	0.00	0.00	31.65
Gas Stove	39.46	42.57	37.18	42.05	42.51	10.99	66.55	34.84	57.08
Gas Clothes Dryer	38.53	36.66	54.54	38.22	7.96	3.11	66.55	3.12	40.41
Gas Grill	0.18	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00
Industrial Gas Equipment (lab, manufacturing)	1.96	5.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gas Oven	0.41	0.05	0.86	0.96	0.00	0.00	0.00	0.00	0.00
Propane Powered	1.07	0.00	0.00	0.00	8.15	1.41	0.00	0.00	0.00
Fryer	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
No natural gas	2.15	2.53	0.08	2.63	0.00	22.59	11.10	3.73	0.00
Other	2.62	1.76	0.67	0.00	13.67	0.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don’t Know	0.01	0.00	0.01	0.03	0.02	0.09	0.00	0.02	0.06
n	*233*	*78*	*48*	*23*	*22*	*28*	*7*	*17*	*10*
<C0> About what percentage of your operating costs does energy account for?									
Less than 1 percent	4.00	1.62	5.00	8.05	0.50	9.12	3.11	0.43	10.04
1 to 2 percent	4.92	4.11	4.78	4.93	2.90	18.78	9.99	7.71	7.77

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
3 to 5 percent	14.55	19.49	12.23	6.46	17.98	21.08	14.66	26.10	42.62
6 to 10 percent	13.31	16.46	6.86	8.98	34.55	4.99	10.35	4.83	15.59
11 to 15 percent	3.42	4.83	0.71	12.66	0.00	2.12	12.48	0.00	0.00
16 to 20 percent	5.18	4.42	6.15	4.78	4.63	3.35	0.00	13.91	0.32
21 to 50 percent	3.16	4.51	1.92	6.28	0.42	6.03	7.32	2.18	0.65
Over 51 percent	4.04	5.87	3.70	3.24	2.30	2.13	6.75	10.87	0.00
REFUSED	1.09	0.00	0.00	8.52	0.00	0.00	0.00	0.00	0.00
DON'T KNOW	46.34	38.69	58.65	36.10	36.72	32.41	35.34	33.98	23.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<CC4> Does your business own, lease or manage the facility?									
Own	54.04	51.43	57.10	31.43	80.06	32.79	21.26	45.51	17.70
Lease/Rent	30.17	29.14	30.55	36.89	11.73	58.85	73.09	54.03	82.30
Manage	14.74	18.08	12.36	31.68	3.00	8.36	5.66	0.46	0.00
DON'T KNOW	1.05	1.35	0.00	0.00	5.21	0.00	0.00	0.00	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<C5> How many locations does your organization have. Is it....									
This facility only	54.51	40.85	55.98	78.71	46.66	64.60	79.71	84.72	60.52
2 to 4 locations	13.65	21.25	12.75	2.35	10.71	23.52	11.90	2.91	39.32
5 to 10 locations	13.67	7.35	15.09	7.68	31.39	3.85	0.00	0.85	0.16
11 to 25 locations	1.96	0.41	3.03	2.42	0.00	3.11	8.38	4.38	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
More than 25 locations	14.88	29.19	13.15	0.33	11.25	4.91	0.00	7.14	0.00
Refused	1.09	0.00	0.00	8.52	0.00	0.00	0.00	0.00	0.00
Don't Know	0.25	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<CC6> How active a role does your business take in making lighting and climate control equipment purchase decisions at this facility? Would you say you are…									
Very active – involved in all phases and have veto power	43.37	52.61	37.69	42.12	44.50	53.69	24.92	38.22	71.10
Somewhat active - we approve decisions and provide some input and review	34.33	30.78	37.11	31.23	34.76	38.46	30.26	35.13	20.46
Slightly active - we have a voice but it's not the dominant voice	14.41	11.17	20.14	10.97	7.19	5.69	22.47	4.50	7.11
Not active at all - we are part of a large organization	2.21	0.98	1.78	1.13	6.62	1.13	3.98	14.65	0.00
OR not active at all - our firm doesn't get involved in these issues	2.27	1.23	2.50	5.45	0.00	1.02	8.38	6.52	1.33
Refused	1.09	0.00	0.00	8.52	0.00	0.00	0.00	0.00	0.00
Don't Know	2.33	3.23	0.79	0.58	6.93	0.00	9.99	0.99	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<CC8> In what year was your facility built?									
After 2000	16.57	15.67	18.62	8.28	23.30	2.56	17.24	8.12	4.48
1990s	16.01	5.81	25.90	11.54	9.24	11.88	13.79	26.95	3.46
1980s	9.34	17.59	4.89	8.18	4.10	25.32	13.14	20.10	20.04

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
1970s	14.95	13.96	4.93	37.12	28.45	17.16	4.27	13.86	11.37
1960s	7.34	7.29	7.90	5.63	7.24	9.76	0.56	5.93	41.94
1950s	7.29	6.07	10.35	3.35	3.57	10.32	2.89	1.30	8.14
Before 1950	9.92	12.92	8.25	8.59	12.76	7.99	0.00	0.00	0.00
Don't Know	18.59	20.70	19.17	17.31	11.33	15.02	48.10	23.74	10.56
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<CC10> If Don't Know, would you say it was...									
2000's	21.31	0.00	48.13	0.41	0.00	0.00	0.00	2.21	12.58
1990's	12.60	35.68	2.57	2.33	1.03	10.78	5.93	61.18	1.54
1980's	10.67	4.28	7.70	21.22	14.39	19.08	46.80	0.40	49.74
1970's	6.98	1.94	5.74	11.31	12.40	35.86	14.24	9.60	1.54
1960's	18.25	18.99	26.98	7.03	0.00	0.00	0.00	9.86	0.00
1950's	3.61	9.88	0.23	0.41	3.88	12.02	0.00	0.00	6.14
Before 1950	7.74	16.66	0.22	12.49	9.38	10.98	8.11	0.00	11.19
DON'T KNOW	18.85	12.57	8.43	44.80	58.92	11.28	24.92	16.76	17.26
n	*170*	*32*	*47*	*31*	*7*	*12*	*17*	*16*	*8*
<CC11> In what year was this facility last remodeled?									
Between 2008 and present	66.14	61.81	72.78	52.75	68.01	57.32	64.31	81.32	43.39
Between 2000 and 2007	12.03	5.98	10.12	20.54	20.02	22.53	5.07	1.08	46.08
During the 1990s	4.37	11.19	0.74	2.57	5.74	2.36	0.00	0.00	1.96

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Before the 1990s	3.54	4.30	0.82	9.47	4.78	7.15	0.00	0.88	0.00
Refused	0.05	0.00	0.00	0.04	0.00	1.49	0.00	0.00	0.00
Don't Know	13.86	16.72	15.55	14.64	1.46	9.14	30.62	16.73	8.57
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<CC11A> Would you say the last remodeling was done …									
Between 2010 and present	37.71	62.43	16.08	51.25	0.00	74.40	52.47	40.20	54.10
Between 2006 and end of 2009	7.06	5.22	10.96	1.49	0.00	0.00	0.00	0.00	0.00
Between 2000 and end of 2005	3.80	2.84	5.82	0.91	0.00	0.00	0.00	2.55	0.00
During the 1990s	6.56	10.81	1.12	19.91	0.00	0.00	0.00	0.00	0.00
Before the 1990s	0.78	0.42	0.21	0.00	0.00	12.26	7.56	0.00	0.00
Refused	0.14	0.06	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	43.95	18.22	65.55	26.45	100.00	13.34	39.97	57.25	45.90
n	*105*	*21*	*26*	*23*	*1*	*8*	*9*	*10*	*7*
<CC12a> In what year was this organization established at this location?									
Between 2009 and present	17.45	21.39	8.06	15.07	36.05	30.93	33.00	48.09	19.94
Between 2006 and 2008	9.43	4.48	8.64	25.44	6.81	5.17	15.52	1.40	8.82
Between 2000 and 2005	20.27	16.30	28.98	9.81	13.46	11.40	14.17	5.00	12.22
In the 1990s	17.91	22.08	19.12	16.68	9.94	7.31	16.63	15.50	16.88
1980s	12.79	21.17	12.50	6.49	3.58	20.77	0.87	3.13	0.00
1970s	5.59	1.05	4.34	19.07	2.69	18.11	0.00	9.78	38.59

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
1960s	2.98	2.30	4.18	3.52	0.00	4.61	0.00	0.00	0.00
1950s	0.57	1.08	0.19	0.16	1.35	0.00	0.58	0.00	2.41
Before 1950	3.68	0.28	4.82	1.68	9.53	1.70	0.00	0.00	0.00
Don't Know	9.33	9.87	9.17	2.10	16.58	0.00	19.24	17.10	1.13
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<CC12b> If Don't Know, would you say it was…									
After 2010	20.25	54.69	1.12	82.41	0.00	0.00	64.79	58.83	100.00
Between 2006 and end of 2009	0.98	2.95	0.42	0.00	0.00	0.00	0.00	0.00	0.00
Between 2000 and end of 2005	48.42	0.44	90.10	0.00	43.64	0.00	0.00	0.00	0.00
In the 1990s	8.07	18.25	5.58	13.83	0.00	0.00	0.00	41.17	0.00
In the 1970s	0.11	0.00	0.00	3.76	0.00	0.00	0.00	0.00	0.00
In the 1960s	2.32	0.00	0.00	0.00	9.72	0.00	0.00	0.00	0.00
Before 1960	8.78	22.32	2.78	0.00	6.41	0.00	0.00	0.00	0.00
Don't Know	11.07	1.36	0.00	0.00	40.24	0.00	35.21	0.00	0.00
n	*33*	*10*	*7*	*4*	*5*	*0*	*3*	*3*	*1*
<BC090> Has the square footage of the facility increased, decreased or remained the same?									
Increase in square footage	1.54	4.12	0.11	0.55	0.00	11.30	0.29	0.00	0.00
Decrease in square footage	0.65	0.88	0.50	0.78	0.00	0.00	6.85	0.00	0.00
Stayed the same	97.78	94.87	99.39	98.67	100.00	88.70	92.86	100.00	100.00
DON'T KNOW	0.03	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<BC100> How many square feet were added?									
Less than 1,500 sq ft	13.77	0.00	100.00	52.27	0.00	20.88	100.00	0.00	0.00
Between 1,500 and 5,000 sq ft	58.14	93.40	0.00	47.73	0.00	0.00	0.00	0.00	0.00
Between 10,000 and 25,000 sq ft	0.47	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Between 75,000 and 100,000 sq ft	24.18	0.00	0.00	0.00	0.00	79.12	0.00	0.00	0.00
Over 100,000 sq ft (ag. area)	3.44	5.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*13*	*6*	*1*	*2*	*0*	*3*	*1*	*0*	*0*
<BC110> By how many square feet was the facility reduced?									
Less than 1,500 sq ft	64.83	0.00	100.00	100.00	0.00	0.00	100.00	0.00	0.00
Between 1,500 and 5,000 sq ft	35.17	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*4*	*1*	*1*	*1*	*0*	*0*	*1*	*0*	*0*
<BC120> What year did this change in square feet occur?									
2012	15.09	17.60	0.00	0.00	0.00	0.00	96.00	0.00	0.00
2013	5.71	0.00	17.46	0.00	0.00	20.88	4.00	0.00	0.00
2014	12.55	4.57	82.54	0.00	0.00	0.00	0.00	0.00	0.00
2015	3.49	0.43	0.00	41.54	0.00	0.00	0.00	0.00	0.00
2016	43.49	44.00	0.00	58.46	0.00	79.12	0.00	0.00	0.00
DON'T KNOW	19.68	33.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
n	*18*	*8*	*2*	*3*	*0*	*3*	*2*	*0*	*0*
<V1> Now I would like to find out, did you use a contractor/vendor to install the lighting measures that were installed through the Program?									
YES	58.84	38.80	64.94	66.75	68.78	74.68	31.28	81.38	62.95
NO	36.52	59.75	26.22	30.56	31.22	20.71	68.72	18.62	37.05
REFUSED	0.05	0.00	0.00	0.00	0.00	1.49	0.00	0.00	0.00
DON'T KNOW	4.60	1.45	8.84	2.69	0.00	3.12	0.00	0.00	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<V2> How did you come into contact with the contractor/vendor?									
They contacted you	66.65	38.94	80.20	77.21	43.49	69.71	93.43	72.20	96.89
You contacted them	11.13	19.33	4.69	8.52	25.99	6.24	0.91	8.75	2.07
You had worked with them before	17.04	31.49	9.53	13.86	28.41	13.88	5.66	18.41	1.03
Contractor	0.53	0.00	0.00	0.00	0.75	10.17	0.00	0.00	0.00
Utility/program referral	2.40	0.00	5.07	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.30	1.75	0.00	0.00	0.00	0.00	0.00	0.64	0.00
DON'T KNOW	1.95	8.49	0.50	0.41	1.35	0.00	0.00	0.00	0.00
n	*333*	*63*	*83*	*66*	*32*	*33*	*14*	*25*	*17*
<V2A> In relation to this project, did the vendor/contractor approach you about retrofiting your lighting?									
YES	29.35	32.62	10.35	80.38	24.83	12.58	0.00	0.00	0.00
NO	70.34	67.38	89.65	17.02	75.17	87.42	100.00	100.00	100.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
DON'T KNOW	0.31	0.00	0.00	2.60	0.00	0.00	0.00	0.00	0.00
n	*34*	*10*	*4*	*6*	*9*	*2*	*1*	*1*	*1*
<V2B> On a scale of 0 - 10, with 0 being very unlikely and 10 being very likely. How likely is it that your organization would have retrofitted lighting equipment had the contractor/vendor not contacted you?									
1 NOT AT ALL LIKELY	15.40	14.38	16.20	26.44	0.00	4.99	2.97	10.96	13.48
2	3.67	11.76	2.13	2.69	0.00	10.14	26.03	0.00	0.00
3	5.16	3.39	6.48	0.07	4.04	17.50	0.00	19.28	0.00
4	20.45	12.22	23.39	30.36	0.00	23.89	0.00	3.72	61.97
5	5.63	1.15	5.88	7.27	2.27	4.33	38.02	30.88	12.37
6	11.71	0.64	19.86	4.39	0.00	5.14	0.00	1.49	0.00
7	4.31	29.77	1.41	0.00	0.00	2.53	0.00	0.00	0.00
8	4.04	8.61	5.00	0.12	3.06	0.00	0.00	0.78	0.00
9	3.00	0.49	0.00	11.67	7.32	1.12	0.00	0.00	0.27
10 VERY LIKELY	2.51	7.80	0.32	0.46	11.20	2.23	0.00	2.71	0.00
ZERO NOT AT ALL LIKELY	22.31	8.48	19.31	16.54	57.12	28.14	32.98	30.19	11.92
DON'T KNOW	1.82	1.32	0.00	0.00	14.99	0.00	0.00	0.00	0.00
n	*251*	*39*	*69*	*51*	*17*	*28*	*12*	*21*	*14*
<V3> Did the contractor/vendor tell you about or recommend the program?									
YES	84.71	79.84	95.40	79.23	61.68	93.42	60.60	87.45	91.66
NO	12.63	17.19	4.06	20.38	27.05	5.07	39.40	10.65	8.34

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
DON'T KNOW	2.66	2.97	0.54	0.39	11.27	1.52	0.00	1.90	0.00
n	*333*	*63*	*83*	*66*	*32*	*33*	*14*	*25*	*17*
<V4> Prior to coming into contact with the contractor/vendor, did you organization have plans to replace/install lighting equipment?									
YES	39.57	51.38	48.19	12.63	22.35	28.53	0.00	26.80	0.00
NO	57.31	48.62	47.13	82.73	77.65	71.47	100.00	73.20	100.00
DON'T KNOW	3.12	0.00	4.68	4.64	0.00	0.00	0.00	0.00	0.00
n	*258*	*47*	*70*	*51*	*22*	*29*	*10*	*20*	*9*
<V4A> On a scale of 0 - 10, with 0 being very unlikely and 10 being very likely. How likely is it that your organization would have retrofitted lighting equipment had the contractor/vendor not recommended it?									
1 NOT AT ALL LIKELY	16.02	12.04	22.08	10.00	5.17	2.97	24.16	9.23	60.95
2	3.29	7.71	0.74	7.94	3.84	3.09	0.00	0.00	5.25
3	4.21	1.50	1.38	14.20	4.70	14.94	19.09	0.00	2.60
4	20.57	12.64	23.99	34.08	4.19	15.46	0.00	0.00	4.55
5	6.58	0.50	8.75	6.26	0.00	17.34	5.90	26.32	8.38
6	8.95	0.10	15.53	0.51	0.00	13.47	0.00	1.23	0.00
7	4.35	18.00	0.54	4.67	4.55	0.34	0.00	2.33	0.00
8	3.23	8.24	1.25	2.36	6.83	3.41	0.00	0.00	0.00
9	3.37	0.42	6.10	0.12	0.00	0.86	0.00	0.00	0.00
10 VERY LIKELY	6.13	23.89	0.46	0.34	15.19	2.56	0.00	24.23	0.00
ZERO NOT AT ALL LIKELY	21.72	14.11	16.62	19.00	55.53	25.55	50.86	36.02	18.27

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
DON'T KNOW	1.58	0.85	2.57	0.52	0.00	0.00	0.00	0.65	0.00
n	*258*	*47*	*70*	*51*	*22*	*29*	*10*	*20*	*9*
<V4B> On a scale of 0 - 10, with 0 being very unlikely and 10 being very likely. How likely is it that your organization would have installed lighting equipment with the same level of efficiency if the contractor/vendor had not recommended to do so?									
1 NOT AT ALL LIKELY	11.38	5.59	13.24	11.96	11.27	11.36	3.11	2.09	0.00
2	12.34	0.13	19.06	8.13	0.00	23.69	2.93	0.00	5.25
3	4.42	7.21	0.28	17.47	0.00	14.62	0.00	13.75	2.60
4	8.02	12.70	1.58	36.20	0.00	5.46	0.00	0.00	0.00
5	13.04	6.64	17.53	5.80	6.04	19.36	22.55	26.32	4.55
6	0.03	0.00	0.00	0.12	0.00	0.00	0.00	1.23	0.00
7	4.49	0.00	7.48	2.30	0.00	0.86	0.00	23.38	0.00
8	6.73	24.53	3.23	0.13	8.35	0.69	0.00	0.00	61.51
9	0.91	0.33	0.86	0.88	2.50	0.00	0.00	0.00	0.00
10 VERY LIKELY	4.95	19.57	0.00	0.02	14.45	2.89	0.00	3.18	7.82
ZERO NOT AT ALL LIKELY	20.37	22.51	12.22	16.29	57.39	19.72	71.41	27.98	18.27
DON'T KNOW	13.35	0.79	24.54	0.70	0.00	1.36	0.00	2.07	0.00
n	*258*	*47*	*70*	*51*	*22*	*29*	*10*	*20*	*9*
<V40> On a scale of 0 - 10, with 0 being very unlikely and 10 being very likely. How important was the input from the contractor you worked with in deciding which specific equipment to install? Was it …									
1 NOT AT ALL IMPORTANT	0.21	0.00	0.28	0.29	0.00	0.00	3.11	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
2	0.04	0.00	0.00	0.31	0.00	0.00	0.00	0.00	0.00
3	1.18	0.10	0.44	2.17	0.00	14.19	0.00	0.00	0.56
4	1.65	5.00	0.99	2.35	0.00	0.00	0.00	0.00	0.00
5	5.47	22.46	1.63	4.98	0.00	7.46	0.00	0.00	0.00
6	7.26	0.00	4.98	33.97	0.00	0.00	0.00	0.74	0.00
7	12.04	25.66	14.36	1.03	0.00	3.02	0.00	2.12	5.25
8	25.44	6.22	37.50	22.12	0.99	29.34	0.00	0.00	65.50
9	7.45	6.21	2.87	18.84	13.88	10.15	22.02	32.06	0.00
10 EXTREMELY IMPORTANT	37.47	30.79	36.69	10.69	80.93	32.11	74.87	63.82	28.69
ZERO NOT AT ALL IMPORTANT	1.51	2.28	0.23	2.73	4.19	3.74	0.00	0.65	0.00
DON'T KNOW	0.31	1.28	0.05	0.52	0.00	0.00	0.00	0.62	0.00
n	*258*	*47*	*70*	*51*	*22*	*29*	*10*	*20*	*9*
<AP9> How did you FIRST learn about the Utility's program?									
Bill insert	4.12	0.00	6.13	2.34	7.68	3.80	0.56	7.31	2.81
Program literature	2.30	3.34	1.75	1.98	1.84	1.84	8.52	0.00	0.00
Account representative	11.55	22.08	3.70	26.35	1.34	14.43	9.19	28.26	7.55
Program Approved Vendor	10.28	12.45	9.71	5.29	15.02	4.89	0.00	15.40	0.00
Program representative	19.43	29.99	11.80	11.06	28.27	24.16	36.58	12.34	68.29
Utility or program website	2.06	0.43	2.09	1.95	1.46	18.86	0.00	0.52	3.78
Trade publication	0.47	1.15	0.00	0.00	1.28	0.00	0.00	0.00	0.00
Conference	0.17	0.22	0.17	0.00	0.00	1.35	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Newspaper article	0.02	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00
Word of mouth	12.47	11.11	9.09	26.59	14.09	5.98	12.63	8.69	6.71
Previous experience with it	6.81	3.84	12.70	0.08	2.49	0.00	2.79	0.00	0.00
Company used it at other locations	0.72	0.38	0.72	0.00	2.30	0.00	0.00	0.00	0.00
Contractor	23.28	13.81	28.73	23.70	23.19	23.92	29.45	15.95	10.87
Result of an audit	3.45	0.00	8.06	0.00	0.00	0.00	0.00	0.52	0.00
Part of larger expansion or remodeling effort	0.13	0.48	0.00	0.07	0.00	0.00	0.00	0.00	0.00
Industrial affiliate	0.07	0.07	0.00	0.00	0.00	0.00	0.00	9.78	0.00
Other	0.16	0.05	0.02	0.00	1.03	0.00	0.00	0.00	0.00
Don't Know	2.53	0.62	5.32	0.46	0.00	0.77	0.28	1.21	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<AP9A> How else did you learn about Utility's program?									
Bill Insert	3.43	3.12	1.00	15.80	0.79	0.78	0.00	0.00	0.65
Program Literature	4.85	4.10	2.23	16.23	3.38	1.57	12.22	4.21	3.03
Account Representative	0.92	2.85	0.09	1.03	0.00	0.00	0.00	0.49	0.00
Program Approved Vendor	1.88	2.19	2.12	1.31	1.64	0.72	0.00	0.00	0.00
Program Representative	3.14	5.90	0.06	4.26	4.19	12.08	2.80	0.10	0.00
Utility or Program Website	5.01	4.23	9.03	0.66	0.00	1.57	0.00	2.21	0.00
Trade Publication	0.08	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Conference	0.31	0.00	0.00	0.00	0.00	9.13	0.00	0.00	10.25
Newspaper Article	0.33	0.07	0.00	2.35	0.00	0.00	0.00	0.00	5.32

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Word of Mouth	3.98	7.27	0.81	10.64	1.03	0.96	10.67	0.00	10.57
Previous experience with it	1.59	0.00	3.48	0.79	0.00	0.00	0.00	0.00	35.17
Company used it at other locations	0.15	0.00	0.00	0.00	1.06	0.00	0.00	0.00	0.00
Contractor	0.97	0.51	1.45	0.96	0.00	2.60	0.00	5.89	0.00
Result of an audit	3.54	0.00	8.51	0.00	0.00	0.00	0.00	0.00	0.00
Part of larger expansion or remodeling effort	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Television	0.52	1.52	0.18	0.36	0.00	0.00	0.00	0.00	0.00
No other sources	71.14	66.04	70.20	60.27	90.78	81.30	74.31	91.22	45.27
Other	13.84	11.71	20.26	15.51	1.68	2.46	0.58	0.49	0.00
Refused	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	1.28	3.53	0.47	1.15	0.00	0.00	0.00	1.78	0.00
Television	0.52	1.52	0.18	0.36	0.00	0.00	0.00	0.00	0.00
n	*551*	*130*	*130*	*104*	*38*	*50*	*31*	*37*	*31*
<N33> You mentioned that you have an Utility Account Rep. Can you give me his or her name? Do you have his/her email address? Do you have a phone number for him/her?									
Don't have Account Rep	59.69	47.49	70.20	82.92	0.00	15.83	0.00	0.00	0.00
Record information	16.51	22.93	19.27	0.00	100.00	84.17	0.00	24.09	0.00
Refused	1.16	0.56	10.43	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	22.94	29.59	0.10	17.08	0.00	0.00	100.00	75.91	100.00
n	*36*	*11*	*5*	*9*	*1*	*2*	*1*	*5*	*2*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<ID0> To the best of your knowledge, has the facility located at this address received a Utility-sponsored energy audit within the past 3 years?									
YES	18.07	17.03	22.21	10.85	17.10	9.90	0.58	31.95	17.16
NO	58.62	65.58	48.32	73.95	58.09	65.36	97.24	42.00	69.81
DON'T KNOW	23.32	17.39	29.47	15.20	24.81	24.74	2.18	26.04	13.03
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<N2> Did your company make the decision to install measure before or after you became aware of rebates/cost reduction available through the program?									
Before	16.45	23.80	7.91	3.38	47.01	2.13	2.35	16.46	9.98
After	78.36	71.67	83.83	96.05	51.86	90.04	97.65	80.84	90.02
DON'T KNOW	5.19	4.53	8.26	0.57	1.13	7.83	0.00	2.70	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<N3A> On a scale of 1-10 please rate the age or condition of the old measure?									
1 NOT AT ALL IMPORTANT	14.35	23.52	8.30	30.71	4.02	8.24	0.52	0.48	3.90
2	3.85	4.40	1.68	10.33	3.87	2.08	2.79	11.63	0.16
3	3.80	5.26	2.59	2.31	5.50	2.04	12.23	1.66	42.08
4	1.93	1.24	1.88	3.63	1.89	2.71	0.00	0.00	1.50
5	23.92	24.31	21.36	12.18	44.56	14.65	22.14	34.56	18.88
6	4.87	10.68	4.04	0.51	1.63	2.80	0.87	0.43	1.13
7	9.20	8.75	10.03	12.33	4.65	13.24	2.23	1.03	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
8	11.08	6.21	16.11	6.13	2.05	24.79	42.31	21.25	2.63
9	6.12	1.56	9.70	0.04	10.49	3.78	0.00	6.23	0.16
10 EXTREMELY IMPORTANT	10.15	4.32	13.85	8.98	8.63	18.04	11.80	8.64	16.42
ZERO NOT AT ALL IMPORTANT	9.61	8.32	8.82	12.85	12.70	6.84	3.96	11.87	13.14
DON'T KNOW	1.13	1.44	1.65	0.00	0.00	0.77	1.14	2.21	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<N3AA> How, specifically, did this enter into your decision to install/delamp this lighting equipment?									
To reduce energy costs	5.72	6.20	5.70	8.60	0.00	0.00	33.33	0.00	4.26
To reduce energy use / power outages	37.43	16.67	50.15	5.19	41.88	7.83	0.00	0.00	46.45
To update to the latest technology	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Had process problems and were seeking a solution	4.69	15.23	0.63	0.00	0.00	24.70	0.00	0.00	0.00
As part of a planned remodeling / build-out / expansion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To replace old / outdated equipment	35.08	18.26	36.85	66.99	45.80	44.93	1.30	75.36	24.65
To improve equipment performance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To improve production as a result of the change in equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To improve visibility / plant safety	1.94	0.18	0.06	15.06	0.00	9.43	45.77	22.83	0.00
To improve the comfort level of the facility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To protect the environment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100% paid for	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
For the rebate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Very important	0.54	0.00	0.50	0.00	1.02	0.00	14.35	0.00	23.29
Did not effect	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Old equipment was too expensive	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	14.16	42.79	6.10	11.10	0.00	13.11	0.00	0.00	0.00
Refused	0.03	0.00	0.00	0.00	0.00	0.00	2.68	0.00	0.00
Don't Know	0.82	0.66	0.00	0.00	11.29	0.00	5.25	1.81	1.35
n	*93*	*21*	*20*	*17*	*6*	*10*	*8*	*4*	*7*
<N3B> On a scale of 1-10 please rate the availability of the program rebate/cost reduction									
1 NOT AT ALL IMPORTANT	1.11	0.02	0.00	8.68	0.00	0.00	0.00	0.00	0.00
2	0.33	0.07	0.00	0.00	1.78	0.00	0.00	14.98	0.00
3	1.82	7.03	0.00	0.01	0.00	0.00	0.00	1.66	0.00
4	0.95	1.79	0.02	0.00	3.56	0.00	0.00	0.00	0.00
5	6.41	12.29	3.49	0.82	11.46	1.49	0.29	11.10	8.51
6	1.41	1.13	1.30	1.19	1.03	8.36	0.59	0.00	0.00
7	7.80	5.79	11.01	4.56	5.86	5.27	3.62	1.40	1.13
8	18.09	12.72	19.16	6.33	37.25	22.71	1.38	8.53	17.15
9	7.18	15.53	3.07	5.55	4.65	11.82	5.99	4.59	39.08
10 EXTREMELY IMPORTANT	53.04	40.86	60.72	72.57	31.36	50.10	78.14	53.64	34.13
ZERO NOT AT ALL IMPORTANT	0.78	1.18	0.05	0.29	3.06	0.00	0.00	1.93	0.00
DON'T KNOW	1.09	1.60	1.19	0.00	0.00	0.24	9.99	2.18	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<N3BB> Why do you give it this rating?									
Cost effectiveness/Payback	41.26	61.77	41.27	29.38	28.15	4.77	1.26	57.62	22.88
100% paid for	6.05	2.82	9.43	1.67	0.23	10.23	22.48	17.37	51.83
It motivated the decision to participate in the program	3.21	5.20	2.88	2.22	0.00	10.07	0.00	20.46	1.82
Needed rebate to participate	10.96	15.37	6.08	13.15	17.27	24.11	1.27	0.00	0.00
Were going to do it anyway	7.15	4.40	0.04	0.00	47.86	0.00	0.00	0.00	0.00
Availability	4.92	2.01	7.53	3.04	0.00	18.47	0.00	0.00	10.28
Other	21.87	8.42	32.66	18.58	2.76	32.34	74.99	3.57	12.74
REFUSED	3.77	0.00	0.00	29.63	0.00	0.00	0.00	0.99	0.22
DON'T KNOW	0.82	0.00	0.10	2.34	3.73	0.00	0.00	0.00	0.22
n	*172*	*35*	*34*	*37*	*13*	*12*	*15*	*8*	*18*
<N3C> Please rate the degree of importance of information provided through the Facility or System AUDIT									
1 NOT AT ALL IMPORTANT	16.37	22.03	20.95	0.00	0.00	0.00	0.00	0.00	0.00
3	12.12	43.15	0.00	0.00	12.93	0.00	0.00	0.00	0.00
4	0.67	0.00	0.00	8.70	0.00	0.00	0.00	0.00	0.00
5	4.95	0.00	0.00	36.98	16.61	0.00	0.00	0.00	0.00
6	0.30	0.00	0.12	0.00	0.00	13.61	0.00	0.00	0.00
7	5.18	0.00	1.63	1.24	27.20	29.00	0.00	30.61	7.65
8	8.43	11.68	3.31	16.14	17.64	20.59	0.00	0.00	11.53
9	3.58	10.57	0.00	12.15	0.00	0.00	100.00	0.00	30.62

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
10 EXTREMELY IMPORTANT	11.49	12.57	9.07	23.90	7.51	36.80	0.00	22.51	50.20
ZERO NOT AT ALL IMPORTANT	2.30	0.00	0.00	0.00	18.11	0.00	0.00	0.00	0.00
DON'T KNOW	34.61	0.00	64.92	0.89	0.00	0.00	0.00	46.87	0.00
n	*78*	*17*	*15*	*18*	*9*	*5*	*1*	*5*	*8*
<N3CC> Why do you give it this rating?									
Estimated energy savings	16.04	32.43	12.72	0.00	0.00	0.00	0.00	6.83	30.49
Learned about own energy usage	8.83	0.57	8.26	0.00	47.77	0.00	0.00	0.00	52.38
Very Important	22.67	0.00	2.19	83.56	52.23	0.00	0.00	0.00	0.00
Other	36.44	23.82	76.83	16.44	0.00	0.00	100.00	93.17	15.25
REFUSED	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.88
DON'T KNOW	16.02	43.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*23*	*4*	*5*	*5*	*2*	*0*	*1*	*2*	*4*
<N3D> Recommendation from an equipment vendor that sold you the lighting measure and/or installed it?									
1 NOT AT ALL IMPORTANT	0.20	0.81	0.06	0.23	0.00	0.00	0.00	0.00	2.11
2	0.12	0.00	0.00	0.81	0.00	0.00	0.00	0.64	0.00
3	2.35	13.72	0.02	0.00	0.00	0.00	0.00	2.04	0.00
4	2.28	9.88	0.42	0.00	0.00	10.17	0.00	0.00	0.00
5	13.58	15.93	5.84	37.22	14.89	8.04	0.00	9.18	0.00
6	7.13	0.05	13.32	0.54	3.61	4.27	0.89	1.90	0.00
7	7.00	8.72	1.97	6.95	19.67	7.72	11.57	1.75	60.68

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
8	17.45	12.55	20.58	22.05	7.12	25.89	0.00	36.12	4.95
9	5.09	11.47	2.40	6.11	2.81	15.11	1.78	6.24	10.73
10 EXTREMELY IMPORTANT	42.82	24.85	55.36	24.68	44.54	28.81	53.83	42.13	20.50
ZERO NOT AT ALL IMPORTANT	1.63	1.61	0.02	1.28	7.38	0.00	0.00	0.00	1.03
DON'T KNOW	0.35	0.40	0.01	0.14	0.00	0.00	31.94	0.00	0.00
n	*333*	*63*	*83*	*66*	*32*	*33*	*14*	*25*	*17*
<N3E> On a scale of 1-10 please rate your previous experience with energy efficient lighting projects?									
1 NOT AT ALL IMPORTANT	6.08	1.95	3.04	29.62	1.44	7.45	3.62	2.24	1.31
2	0.10	0.04	0.00	0.00	0.61	0.00	0.00	0.95	0.00
3	1.51	0.24	0.12	5.43	2.48	9.75	0.00	11.72	0.00
4	2.21	4.19	2.17	0.29	0.50	0.71	0.28	14.98	0.00
5	8.67	8.73	10.62	2.01	10.57	5.51	0.00	5.46	2.51
6	1.80	1.24	3.05	1.30	0.00	0.00	0.00	0.95	1.33
7	4.75	7.38	5.30	2.62	0.92	3.24	0.56	1.95	5.58
8	15.25	15.91	14.11	17.01	17.86	3.21	20.26	26.92	11.57
9	3.96	11.29	0.30	0.97	3.40	9.43	0.00	0.00	37.74
10 EXTREMELY IMPORTANT	22.35	16.50	35.64	7.35	4.92	23.17	31.46	7.07	15.18
ZERO NOT AT ALL IMPORTANT	28.86	26.36	23.69	25.81	52.08	31.85	32.10	27.77	21.82
REFUSED	0.01	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.16
DON'T KNOW	4.46	6.17	1.98	7.61	5.21	5.54	11.72	0.00	2.79
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<N3F> On a scale of 1-10 please rate your previous experience with the utility, the program or a similar utility program?									
1 NOT AT ALL IMPORTANT	3.89	1.40	2.63	12.46	4.06	8.14	0.00	2.46	1.31
2	1.35	2.44	0.28	0.00	3.97	2.02	0.00	0.00	0.00
3	5.70	5.54	7.77	2.24	1.06	14.18	0.00	15.76	0.00
4	1.63	4.12	0.66	0.78	0.00	2.11	0.00	24.76	0.00
5	4.96	6.74	1.94	0.46	16.59	1.40	3.85	0.00	5.86
6	1.89	1.62	0.00	4.04	6.51	1.70	0.00	6.61	0.00
7	5.12	2.97	3.14	10.79	11.62	1.13	1.77	2.06	0.32
8	14.60	13.58	13.16	8.88	28.23	5.31	23.05	3.81	10.57
9	6.61	19.10	2.10	1.58	2.96	4.88	0.00	0.00	36.50
10 EXTREMELY IMPORTANT	26.52	26.12	36.67	15.30	8.41	18.79	24.58	9.35	14.33
ZERO NOT AT ALL IMPORTANT	24.57	13.57	29.58	41.33	11.37	30.88	35.03	16.58	25.53
REFUSED	0.15	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.16
DON'T KNOW	3.00	2.81	1.72	2.15	5.21	9.47	11.72	18.60	5.42
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<N3H> On a scale of 1-10 please rate Information from the program or utility marketing materials?									
1 NOT AT ALL IMPORTANT	6.10	9.30	0.70	18.26	5.63	9.80	0.00	1.01	2.81
2	2.39	5.35	0.52	0.48	1.93	13.12	3.62	0.43	0.00
3	2.86	8.64	0.49	2.11	0.00	4.49	0.28	1.66	3.03
4	1.91	1.04	2.29	2.14	1.61	3.74	0.28	10.31	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
5	9.88	4.22	5.59	27.93	13.97	13.90	27.69	18.68	7.91
6	7.24	5.93	12.34	2.70	0.00	2.26	0.00	2.07	6.55
7	4.77	2.33	5.03	3.46	8.16	6.95	11.94	7.95	37.84
8	15.05	21.80	5.98	8.59	36.61	14.06	24.20	8.31	12.90
9	3.72	7.70	1.37	4.11	3.24	5.91	0.00	0.00	0.00
10 EXTREMELY IMPORTANT	27.99	13.11	49.85	14.29	5.19	15.89	14.33	5.09	19.43
ZERO NOT AT ALL IMPORTANT	11.70	11.69	13.37	5.52	12.94	9.89	5.18	26.81	9.04
REFUSED	0.02	0.04	0.00	0.00	0.00	0.00	0.59	0.00	0.00
DON'T KNOW	6.38	8.85	2.48	10.42	10.72	0.00	11.90	17.68	0.49
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<N3HH> What type of information was provided that pertained to the project?									
Flyer / Brochure / Pamphlets	40.36	38.23	47.16	45.91	15.65	16.42	22.87	0.00	84.34
Program Approved Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Complete overview / documentation / seminar / training	0.38	0.34	0.04	6.38	0.00	0.00	0.00	0.00	0.00
Proposal Costs / Estimate Quotes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rebates / Discounts / Incentives	3.65	13.39	0.11	0.00	0.00	15.07	0.00	100.00	0.00
To reduce energy use / power outages	0.76	2.14	0.00	0.44	0.00	12.51	0.00	0.00	0.00
To reduce energy costs	3.67	0.01	6.01	2.18	0.00	10.05	0.00	0.00	0.00
Information about new technology	1.04	0.00	0.00	7.84	0.00	39.46	0.00	0.00	0.00
The website	4.41	18.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Verbal communication / phone	18.11	14.62	6.15	4.76	88.53	6.50	7.05	0.00	4.13

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Other	12.02	0.58	17.24	32.89	0.00	0.00	74.03	0.00	1.31
Refused	0.43	0.00	0.00	0.00	3.52	0.00	0.00	0.00	0.00
Don't Know	24.08	21.51	32.13	3.58	4.67	0.00	1.03	0.00	10.72
n	*108*	*22*	*25*	*23*	*8*	*7*	*10*	*1*	*12*
<N3HHH> How, specifically, did this enter into your decision to install/delamp this lighting equipment?									
To reduce energy costs	18.83	25.34	21.04	2.57	7.14	17.57	0.00	0.00	0.00
100% paid for	10.47	0.00	21.16	2.23	0.00	0.00	5.02	0.00	4.52
Program Approved Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Complete overview / documentation / seminar / training	6.09	7.16	4.52	24.75	4.03	0.00	0.00	0.00	17.64
To improve equipment performance	1.19	0.00	2.46	0.00	0.00	0.00	0.00	0.00	0.00
To reduce energy use / power outages	18.73	3.29	33.93	1.45	6.60	0.00	15.16	100.00	0.00
Because of the rebate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Did not effect	0.05	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00
Very important	8.82	15.43	4.98	18.00	0.00	50.81	2.10	0.00	0.00
Other	32.90	42.73	11.79	32.12	82.23	21.56	75.68	0.00	77.83
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	2.92	6.06	0.00	18.88	0.00	10.05	2.04	0.00	0.00
n	*89*	*19*	*21*	*19*	*6*	*7*	*9*	*1*	*7*
<N3J> On a scale of 1-10 please rate standard practice in your business/industry									
1 NOT AT ALL IMPORTANT	0.02	0.00	0.00	0.09	0.00	0.00	0.00	0.00	3.23

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
2	0.16	0.00	0.00	0.00	0.00	5.85	0.00	0.00	0.00
3	0.12	0.04	0.00	0.00	0.00	3.71	0.00	0.00	3.73
4	2.50	0.00	4.61	0.38	0.00	13.06	0.00	0.00	0.00
5	6.92	0.95	7.27	20.03	0.00	23.97	17.83	8.19	19.15
6	1.77	1.40	2.42	2.00	0.00	0.00	0.00	11.04	0.00
7	6.42	0.61	2.77	28.72	10.34	6.50	18.43	0.00	0.00
8	9.83	19.44	5.09	14.51	0.21	0.00	30.91	6.74	43.28
9	16.70	28.02	15.39	5.97	10.26	9.43	0.00	2.93	0.20
10 EXTREMELY IMPORTANT	40.64	38.90	45.85	20.81	57.84	11.93	9.92	0.81	21.24
ZERO NOT AT ALL IMPORTANT	5.94	2.71	5.02	5.65	10.63	23.00	21.86	40.81	8.77
DON'T KNOW	9.01	7.93	11.59	1.85	10.71	2.57	1.05	29.49	0.40
n	*208*	*46*	*42*	*43*	*15*	*14*	*17*	*11*	*20*
<N3LL> What did they recommend?									
Replacement of lighting	50.27	19.24	0.00	92.82	0.00	0.00	100.00	100.00	0.00
To reduce energy costs	16.91	31.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00
No recommendation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rebates / Discounts / Incentives	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100% paid for	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recommendation of low pressure nozzles / sprinklers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	28.70	49.23	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Don't Know	4.12	0.00	0.00	7.18	100.00	0.00	0.00	0.00	0.00
n	*12*	*4*	*0*	*4*	*1*	*1*	*1*	*1*	*0*
<N3LLL> How, specifically, did this enter into your decision to install/delamp this lighting equipment?									
To reduce energy costs	0.09	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
To reduce energy use / power outages	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To replace old / outdated equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To improve equipment performance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Played an important role / decision	1.33	0.00	0.00	1.72	0.00	0.00	0.00	100.00	0.00
To protect the environment	0.14	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100% paid for	0.11	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00
Did not effect	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Because of the rebate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Good information provided	17.64	31.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	42.55	0.00	0.00	98.02	0.00	100.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	38.15	68.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*10*	*4*	*0*	*3*	*0*	*1*	*1*	*1*	*0*
<N3M> How, specifically, did this enter into your decision to install this lighting equipment?									
1 NOT AT ALL IMPORTANT	3.65	0.00	6.51	1.20	0.00	20.07	0.00	0.00	3.23
2	1.08	2.57	0.00	1.77	0.00	5.85	0.00	0.00	3.73

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
3	1.70	1.35	1.87	0.00	3.55	3.71	0.00	0.00	0.00
4	1.40	0.00	1.28	3.86	0.00	13.06	0.00	0.00	0.00
5	2.14	0.73	0.83	5.12	2.58	8.38	34.22	0.87	8.18
6	4.86	5.40	0.77	25.07	0.00	0.00	0.00	0.00	12.61
7	5.18	11.91	2.77	0.15	5.77	0.00	3.47	0.00	0.00
8	6.77	13.89	2.95	9.33	0.00	2.57	29.99	6.74	46.51
9	14.40	22.15	14.11	10.81	6.18	0.00	0.00	2.93	0.20
10 EXTREMELY IMPORTANT	37.50	30.25	46.51	8.94	60.57	10.91	9.41	19.16	19.23
ZERO NOT AT ALL IMPORTANT	12.46	8.82	13.69	9.53	11.76	35.46	21.86	40.81	5.91
REFUSED	2.18	0.00	1.25	13.40	0.00	0.00	0.00	0.00	0.00
DON'T KNOW	6.67	2.94	7.47	10.83	9.59	0.00	1.05	29.49	0.40
n	*208*	*46*	*42*	*43*	*15*	*14*	*17*	*11*	*20*
<N3MM> How, specifically, did this enter into your decision to install/delamp this lighting equipment?									
Cost Effectiveness	22.20	41.20	8.95	27.90	10.88	70.54	25.56	74.63	2.06
To reduce energy use / power outages	11.35	9.45	15.85	0.37	7.96	0.00	28.08	0.00	23.12
100% paid for	11.47	0.07	25.71	0.00	0.00	0.00	0.00	25.37	0.00
To protect the environment	10.09	0.00	4.57	0.20	70.23	0.00	0.00	0.00	0.00
To improve the comfort level of the facility	4.02	8.97	0.00	6.77	3.56	0.00	1.19	0.00	0.00
To replace old/outdated equipment	2.95	5.24	2.71	0.00	0.00	0.00	0.00	0.00	8.72
Did not effect	2.90	8.59	0.00	0.58	0.00	0.00	0.00	0.00	5.84
Decision made by management	7.70	0.00	17.36	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Rebate / incentive	0.02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Following official mandates	1.42	0.05	2.68	1.00	1.07	0.00	0.00	0.00	0.00
Because of a recommendation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	10.66	18.09	5.00	13.85	6.30	0.00	42.83	0.00	60.01
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	15.23	8.28	17.18	49.32	0.00	29.46	2.34	0.00	0.25
n	*108*	*30*	*19*	*22*	*9*	*4*	*9*	*5*	*10*
<N3N> Please rate the degree of importance of payback or return on investment of installing this lighting equipment…?									
1 NOT AT ALL IMPORTANT	0.09	0.30	0.00	0.12	0.00	0.00	0.00	0.43	0.16
2	1.53	0.00	0.02	9.49	0.00	9.65	0.00	0.00	0.00
3	1.30	4.21	0.00	0.60	0.00	0.00	3.90	17.67	0.00
4	0.85	0.76	0.19	0.29	2.21	7.59	0.00	0.00	0.00
5	2.62	2.49	1.53	0.46	7.11	7.05	1.71	10.13	10.76
6	1.25	1.94	0.00	1.84	3.21	0.17	5.42	0.00	0.16
7	5.56	5.53	3.74	18.69	0.00	3.32	0.56	5.57	1.66
8	14.68	15.42	14.87	12.10	15.05	19.76	8.98	2.19	3.95
9	12.73	19.90	8.92	7.43	16.94	13.48	7.57	1.55	15.82
10 EXTREMELY IMPORTANT	54.41	39.41	67.96	44.41	54.55	34.87	52.28	55.14	26.68
ZERO NOT AT ALL IMPORTANT	0.99	2.68	0.02	0.96	0.52	2.31	0.00	5.55	4.84
DON'T KNOW	3.99	7.35	2.76	3.61	0.42	1.79	19.59	1.77	35.96
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<N3O> To improve production as a result of lighting?									
1 NOT AT ALL IMPORTANT	3.08	2.20	0.96	15.73	0.00	2.03	1.71	0.48	0.00
2	0.06	0.06	0.00	0.00	0.00	0.00	0.00	1.03	35.17
3	0.93	0.10	2.09	0.00	0.00	0.00	0.00	1.66	0.00
4	0.29	0.56	0.20	0.29	0.00	0.71	0.00	0.00	0.00
5	3.66	8.13	1.45	5.62	0.00	3.46	6.75	2.67	2.98
6	2.66	0.77	1.61	2.11	5.88	18.35	8.38	0.52	1.13
7	3.41	3.99	3.51	1.90	3.10	5.73	0.51	5.14	9.78
8	24.72	32.38	24.81	19.96	14.14	35.21	9.07	10.73	15.17
9	10.02	16.31	3.32	6.63	23.14	5.21	13.43	14.98	6.65
10 EXTREMELY IMPORTANT	49.21	32.52	60.66	46.43	51.69	25.68	59.56	58.28	24.30
ZERO NOT AT ALL IMPORTANT	0.42	0.21	0.02	0.88	1.13	2.31	0.00	4.50	0.32
DON'T KNOW	1.54	2.79	1.37	0.45	0.92	1.30	0.59	0.00	4.51
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<N3OO> How, specifically, did this enter into your decision to install/delamp this lighting equipment?									
To reduce energy costs	19.64	24.48	23.16	12.32	6.22	9.19	41.52	24.82	26.30
To reduce energy use / power outages	9.44	8.94	11.24	5.30	10.35	0.16	3.38	13.95	7.73
100% paid for	1.88	0.22	3.07	3.68	0.00	1.39	0.00	0.00	9.33
To update to the latest technology	0.62	0.56	0.10	0.00	1.97	4.30	0.68	0.62	0.00
To replace old / outdated equipment	1.03	0.00	0.13	7.54	0.00	4.56	0.00	0.00	0.85

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
To improve visibility / plant safety	32.76	13.03	38.04	20.98	55.69	46.06	39.80	12.27	30.98
Had process problems and were seeking a solution	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
No change in appearance / lighting	0.25	0.00	0.35	0.08	0.00	1.10	0.00	10.91	0.00
To improve the comfort level of the facility	1.35	5.38	0.05	0.00	0.00	0.00	0.00	0.00	0.00
To protect the environment	2.95	10.72	0.65	0.06	0.00	0.00	0.00	2.72	0.00
New lights had longer life span	5.25	4.66	3.39	8.63	9.86	6.20	0.00	0.00	0.00
Did not effect	0.11	0.30	0.00	0.37	0.00	0.00	0.00	0.00	0.00
For the rebate	0.68	1.17	0.52	0.00	0.00	4.92	0.00	0.00	0.00
Other	21.03	25.54	14.26	34.80	24.24	22.81	13.94	15.65	24.82
Refused	1.77	6.20	0.53	0.05	0.00	0.00	0.00	0.00	0.00
Don't Know	6.34	9.76	5.97	6.37	1.31	8.42	0.68	21.67	0.28
n	*469*	*109*	*117*	*85*	*35*	*43*	*25*	*29*	*26*
<P1> What financial calculations does your company typically make before proceeding with the installation of lighting equipment like you installed through the program?									
Payback	35.86	57.38	16.15	68.02	20.31	7.69	0.00	31.62	98.62
Return on Investment (ROI)	40.60	47.81	38.99	0.00	31.80	37.75	68.97	66.06	98.62
To reduce energy costs	13.96	3.32	45.88	0.00	0.00	4.38	0.00	0.00	0.00
To improve equipment performance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100% paid for	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To reduce energy use / power outages	0.07	0.00	0.00	0.00	0.00	0.00	25.72	0.00	0.00
To replace old / outdated equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Other	27.68	8.39	42.20	0.48	53.82	25.10	0.00	2.32	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	14.99	17.49	8.93	31.50	11.54	32.77	5.31	0.00	1.38
n	*80*	*32*	*10*	*8*	*10*	*10*	*3*	*4*	*3*
<P2A> What is the threshold in terms of the payback or return on investment your company requires before deciding to proceed with an investment?									
0 to 6 months	13.46	19.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 months to 1 year	22.38	20.47	52.74	0.00	14.00	0.00	0.00	0.00	0.00
1 to 2 years	22.30	27.25	0.00	70.77	1.27	0.00	0.00	0.00	11.37
2 to 3 years	18.28	13.66	0.00	27.22	63.00	0.00	0.00	0.00	0.00
3 to 5 years	9.81	9.74	0.00	2.01	21.73	0.00	0.00	100.00	0.00
Over 5 years	5.63	1.42	38.37	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	8.14	8.26	8.90	0.00	0.00	100.00	0.00	0.00	88.64
n	*29*	*14*	*3*	*3*	*5*	*1*	*0*	*1*	*2*
<P3> Did the rebate move your project within this acceptable range?									
YES	82.46	78.68	95.99	94.80	75.67	69.95	68.97	53.24	98.62
NO	2.69	4.33	0.00	0.00	0.00	14.61	0.00	0.00	0.00
DON'T KNOW	14.85	16.99	4.01	5.20	24.33	15.44	31.03	46.76	1.38
n	*80*	*32*	*10*	*8*	*10*	*10*	*3*	*4*	*3*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<P4> On a scale of 0 to 10, with a 10 meaning "very important" and a 0 meaning "not at all important", how important in your decision was it that the project was now in the acceptable range?									
3	0.33	0.00	1.07	0.00	0.00	0.00	0.00	0.00	0.00
5	2.61	5.42	0.00	0.00	0.00	7.58	0.00	0.00	0.00
6	2.55	0.00	6.45	20.97	0.00	0.00	0.00	0.00	0.00
7	11.84	7.08	26.91	0.00	0.00	11.00	0.00	0.00	0.00
8	10.79	12.76	3.35	50.78	12.94	12.90	0.00	0.00	0.00
9	2.40	2.08	0.00	0.00	0.00	32.27	0.00	0.00	88.64
10 VERY IMPORTANT	69.44	72.62	62.22	28.25	87.06	36.25	100.00	100.00	11.37
DON'T KNOW	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*59*	*24*	*8*	*6*	*8*	*7*	*1*	*3*	*2*
<P3A> The rebate seemed to make the difference between meeting your financial criteria and not meeting them, but you are saying that the rebate didn't have much effect on your decision, why is that?									
Had no idea about it	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	100.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*1*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*
<P3E> Why did it have an impact?									
To replace old/outdated equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
100% paid for	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	100.00	100.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*3*	*1*	*0*	*0*	*0*	*2*	*0*	*0*	*0*
<N5> Using a likelihood scale from 0 to 10, what is the likelihood that you would have installed exactly the same program qualifying lighting equipment that you did in this project?									
1 NOT AT ALL LIKELY	16.05	8.48	22.89	20.08	2.04	27.27	18.84	0.67	51.61
2	7.97	11.69	4.09	16.08	4.94	7.61	13.78	10.50	6.10
3	14.97	9.89	18.01	25.65	3.13	22.94	16.72	5.06	1.38
4	6.97	13.65	3.95	5.23	5.84	9.24	0.00	3.67	0.00
5	9.51	15.37	5.47	6.07	16.73	3.01	4.53	0.00	18.02
6	1.72	1.34	0.16	3.83	5.00	3.63	1.78	0.67	1.17
7	2.22	4.34	2.11	0.18	0.00	2.47	0.00	25.46	0.17
8	8.94	8.54	10.14	3.94	12.14	3.07	7.37	13.13	0.00
9	1.29	4.04	0.51	0.07	0.00	0.60	0.00	1.12	0.00
10 EXTREMELY LIKELY	12.87	14.39	10.99	1.89	30.06	4.62	0.00	6.99	0.00
ZERO NOT AT ALL LIKELY	16.67	7.99	19.95	16.98	20.12	15.08	36.97	32.61	21.55
DON'T KNOW	0.83	0.29	1.72	0.00	0.00	0.48	0.00	0.12	0.00
n	*544*	*130*	*130*	*103*	*37*	*50*	*31*	*34*	*29*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<N5A> Will you explain in your own words, the role the rebate played in your decision to install this efficient equipment?									
To reduce energy costs	37.01	24.77	76.67	5.43	5.84	7.25	0.00	0.00	0.00
To get a return investment from the rebate	0.88	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Would have done it anyway without the rebate	9.06	22.81	0.00	41.57	1.27	24.67	7.08	37.78	0.00
Rebate helps in making decision to participate in the program	10.62	26.02	4.20	12.88	0.00	40.16	92.92	43.76	0.00
RECORD	35.54	8.91	19.13	3.99	88.22	27.93	0.00	0.00	0.00
DON'T KNOW	6.90	14.05	0.00	36.13	4.66	0.00	0.00	18.46	0.00
n	*51*	*16*	*9*	*9*	*4*	*6*	*3*	*4*	*0*
<NN5AA> Would you like for me to change your score on the importance of the rebate that you gave a rating of <N3B> and/or change your rating on the likelihood you would install the same equipment without the rebate which you gave a rating of <N5> and/or we can change both if you wish?									
No change	21.89	33.86	13.56	82.34	5.84	100.00	7.08	8.50	0.00
Other	76.66	66.14	86.44	16.34	89.49	0.00	92.92	73.04	0.00
DON'T KNOW	1.45	0.00	0.00	1.32	4.66	0.00	0.00	18.46	0.00
n	*51*	*16*	*9*	*9*	*4*	*6*	*3*	*4*	*0*
<N5B> If the program had not been available, what is the likelihood that you would have done this project at the same time as you did?									
1 NOT AT ALL LIKELY	18.68	12.82	23.65	30.85	2.46	20.66	19.36	0.67	16.37
2	5.72	3.77	4.60	14.31	4.08	6.21	12.06	5.67	2.84
3	6.07	8.82	3.78	9.15	3.13	6.04	25.34	5.22	0.00
4	3.74	10.26	0.33	0.26	3.17	12.62	5.46	1.70	10.79

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
5	12.21	10.33	13.20	3.54	23.97	5.13	1.72	4.48	8.78
6	1.25	0.28	2.23	0.36	0.44	2.83	1.78	0.67	0.00
7	5.66	10.49	6.03	0.07	1.63	1.97	0.00	24.79	1.17
8	3.55	5.84	1.38	2.07	8.35	0.60	0.00	13.13	0.00
9	0.62	2.12	0.00	0.07	0.00	2.04	0.00	1.12	0.00
10 EXTREMELY LIKELY	11.19	14.29	8.15	0.36	28.61	3.62	0.00	2.24	0.17
ZERO NOT AT ALL LIKELY	30.77	19.85	36.22	38.97	24.17	37.24	33.13	40.20	59.89
DON'T KNOW	0.53	1.14	0.43	0.00	0.00	1.02	1.15	0.12	0.00
n	*544*	*130*	*130*	*103*	*37*	*50*	*31*	*34*	*29*
<TD1> If the program had not been available, how likely is it that you would have replaced your existing equipment within one year of when you did?									
Definitely would have within one year	4.61	8.56	1.02	3.24	13.74	2.04	1.80	1.37	1.34
Probably would have within one year	13.86	26.08	12.94	3.55	9.67	3.32	0.57	17.65	0.00
50-50 chance you would within one year	25.66	21.20	28.93	36.90	6.77	25.82	24.22	44.74	22.49
Probably not within one year	32.61	34.89	36.90	24.11	20.12	37.83	33.67	10.32	56.42
Definitely not within one year	17.79	6.45	16.30	30.43	26.49	29.31	29.57	24.62	19.75
Don’t Know	5.47	2.82	3.91	1.77	23.20	1.68	10.17	1.30	0.00
n	*504*	*112*	*125*	*100*	*32*	*46*	*30*	*31*	*28*
<TD2> If the program had not been available, how likely is it that you would have replaced your existing equipment within three years of when you did?									

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Definitely would have within one year	18.64	36.22	8.60	26.48	15.98	14.62	0.97	20.53	11.47
Probably would have within one year	25.85	29.07	28.97	16.96	18.21	16.75	28.84	25.47	21.51
50-50 chance you would within one year	25.65	11.15	33.21	29.20	23.78	19.13	5.78	42.57	6.59
Probably not within one year	19.06	19.33	20.07	13.94	13.07	32.66	32.74	5.57	47.61
Definitely not within one year	10.47	4.23	9.11	13.42	28.96	8.37	31.67	5.86	12.83
Don't Know	0.33	0.00	0.04	0.00	0.00	8.47	0.00	0.00	0.00
n	*453*	*99*	*116*	*91*	*23*	*43*	*28*	*27*	*26*
<TD3> If the program had not been available, how likely is it that you would have replaced your existing equipment within five years of when you did?									
Definitely would have within one year	20.56	41.49	15.05	24.17	6.50	13.27	12.52	34.39	9.89
Probably would have within one year	33.97	18.88	43.18	31.73	19.83	16.65	38.51	9.86	17.77
50-50 chance you would within one year	27.90	29.48	28.84	21.50	29.81	25.80	23.48	44.65	46.07
Probably not within one year	5.37	4.93	2.54	6.25	11.02	33.40	7.25	6.21	9.79
Definitely not within one year	10.86	5.15	7.91	16.35	32.84	10.88	18.24	4.89	14.50
Don't Know	1.34	0.06	2.49	0.00	0.00	0.00	0.00	0.00	1.98
n	*386*	*76*	*98*	*82*	*20*	*37*	*26*	*23*	*24*
<N9BB> Could you explain in your own words the role the age/condition of the existing equpment played in your decision to install this new measure?									
To reduce energy costs	6.76	14.07	6.28	0.81	0.00	1.80	0.00	0.00	0.00
To reduce energy use / power outages	8.09	0.00	17.66	1.66	0.00	0.00	7.06	4.33	3.61

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
To update to the latest technology	3.79	0.00	0.00	0.00	63.45	9.68	0.00	0.00	0.00
Maintenance cost of equipment	3.54	0.00	0.00	0.00	0.00	23.20	0.00	0.00	0.00
Age didn't make a big impact	4.92	1.43	1.55	33.16	0.00	3.82	0.00	54.65	0.00
Had process problems and were seeking a solution	20.83	3.15	43.47	1.63	0.00	2.40	3.48	34.36	0.00
To improve equipment performance	1.94	0.00	0.00	0.00	36.55	3.48	0.00	0.00	58.37
To replace old / outdated equipment	9.07	0.00	4.96	13.82	0.00	26.43	89.46	41.02	29.18
Rebates / Discounts / Incentives	0.84	0.00	0.00	0.00	0.00	5.52	0.00	0.00	0.00
100% paid for	9.15	4.63	9.85	25.64	0.00	8.86	0.00	0.00	8.84
Other	28.64	76.72	16.23	2.83	0.00	9.03	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	2.67	0.00	0.00	20.46	0.00	5.78	0.00	0.00	0.00
n	*76*	*10*	*18*	*17*	*2*	*17*	*4*	*4*	*4*
<N6> Now I would like you to think one last time about what action you would have taken if the program had not been available. Which of the following alternatives would you have been most likely to do?									
Installed fewer units	11.53	8.02	16.04	13.01	5.83	1.81	0.56	18.20	2.66
Installed standard efficiency equipment or whatever required by code	12.15	20.61	8.23	12.47	7.28	11.47	23.08	8.04	5.98
Installed equipment more efficient than code but less efficient than what you installed through the program	17.25	14.65	25.83	7.39	4.23	17.20	11.75	30.02	39.23
Installed equipment on as needed basis and by affordability (when equipment burned out, budget,..)	28.51	23.29	24.57	46.68	27.93	45.05	49.10	20.75	20.47

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Done nothing (keep the existing equipment as is)	16.44	20.44	6.75	14.28	46.10	5.11	2.29	13.01	15.81
Done the exact same thing you did through the program	11.80	11.53	16.55	5.20	1.64	19.36	13.22	8.93	9.47
Other	0.02	0.03	0.00	0.12	0.00	0.00	0.00	0.00	2.63
Don't Know	2.30	1.43	2.04	0.85	6.99	0.00	0.00	1.06	3.76
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<N6A> How many fewer units would you have installed?									
0-9%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10-19%	49.24	13.36	77.54	3.52	0.00	0.00	100.00	2.88	0.00
20-29%	2.37	0.95	0.09	0.00	24.10	100.00	0.00	0.00	0.00
30-39%	0.02	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
40-49%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40% or less	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50% or less	21.58	73.45	1.09	44.22	22.04	0.00	0.00	0.00	0.00
60% or less	1.63	5.46	0.00	4.52	0.00	0.00	0.00	0.00	50.00
70% or less	1.28	0.00	0.00	8.95	0.00	0.00	0.00	0.00	0.00
80% or less	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90% or less	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	3.50	5.22	0.00	17.92	0.00	0.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	20.37	1.57	21.24	20.87	53.86	0.00	0.00	97.12	50.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
n	*34*	*10*	*8*	*7*	*3*	*1*	*1*	*2*	*2*
<N6B> Can you tell me what model or efficiency level you were considering as an alternative?									
Other	48.17	77.85	37.07	74.72	45.66	11.31	69.21	83.98	9.53
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	52.66	22.88	63.97	25.28	54.34	88.69	30.79	16.02	90.47
n	*65*	*20*	*14*	*9*	*2*	*6*	*3*	*7*	*4*
<ER15> Can you briefly describe the specific code/regulatory requirements that this project addressed?									
Describe code requirements	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	100.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00
n	*2*	*0*	*1*	*0*	*0*	*1*	*0*	*0*	*0*
<PP1> What do you believe the Program's primary strengths are?									
To reduce energy costs	34.09	17.92	52.81	9.16	32.40	27.72	20.74	19.56	50.43
Rebates / Discounts / Incentives	16.52	35.95	4.26	3.17	32.18	18.74	2.57	9.78	11.57
To replace old / outdated equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To reduce energy use / power outages	19.50	22.97	16.09	25.99	18.87	10.38	29.32	16.57	9.80
To protect the environment	1.42	3.72	1.05	0.00	0.00	0.00	0.58	0.52	0.00
No charge to the company	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00
To update / upgrade to the latest technology	0.16	0.00	0.00	0.06	0.00	3.46	3.10	0.52	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Professional Installation / Good Rating	4.59	3.03	4.74	5.74	4.05	14.69	0.26	6.48	1.18
To improve equipment performance	3.50	4.01	3.56	1.48	3.14	5.06	11.73	0.46	7.88
Assistance for small business / business owners	3.31	4.49	1.94	9.24	0.00	0.00	4.66	14.98	3.03
Increasing awareness that the program was available	1.51	0.73	2.72	0.24	0.79	0.00	0.00	4.04	0.00
100% paid for	11.65	0.60	15.28	29.22	3.96	5.15	28.28	22.98	15.94
Other	6.37	7.87	4.50	8.14	5.16	17.34	8.12	3.21	0.49
Refused	0.02	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	4.46	2.40	4.03	15.73	0.52	1.00	0.00	0.46	0.00
n	*561*	*135*	*135*	*105*	*38*	*51*	*27*	*39*	*31*
<PP2> What concerns do you have about the program, if any? (IF NEEDED: What do you view as the primary features that need to be improved?)									
No concerns / None	60.63	52.94	67.16	41.39	66.26	74.37	90.64	67.36	73.07
Highly satisfied with program / High Ratings on program	0.48	0.00	0.87	0.85	0.00	0.00	0.00	0.46	0.16
Not satisfied with service / Could have done something better	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recommending other options based on experience	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concerns / Questions from customer	0.73	0.06	0.00	0.08	5.21	0.00	0.00	0.52	0.00
Other	34.66	44.70	31.23	39.58	26.73	24.92	9.04	31.66	26.77
Refused	0.57	2.09	0.00	0.00	0.00	0.71	0.32	0.00	0.00
Don't Know	2.93	0.20	0.74	18.10	1.80	0.00	0.00	0.00	0.00
n	*561*	*135*	*135*	*105*	*38*	*51*	*27*	*39*	*31*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<PP5> Why do you say that?									
Energy bill too high	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other concerns	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00	100.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*14*	*3*	*3*	*1*	*2*	*2*	*0*	*2*	*1*
<PP5B> Why do you say that?									
No concerns / None	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To replace old/outdated equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To reduce energy costs	7.15	0.00	0.00	0.00	28.83	59.40	0.00	0.00	0.00
Other concerns	92.85	100.00	100.00	100.00	71.17	40.60	100.00	100.00	100.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*29*	*8*	*6*	*4*	*3*	*4*	*1*	*2*	*1*
<PP5C> Using the same 0 - 10 scale, how would you rate your overall satisfaction with the quality of the installers' work?									
1 COMPLETELY DISSATISFIED	0.07	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.15	0.01	0.18	0.54	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
3	0.09	0.00	0.03	0.64	0.00	0.00	0.00	0.00	0.00
4	1.10	0.06	0.00	8.52	0.00	0.00	0.00	0.00	0.00
5	0.96	2.08	0.62	1.24	0.00	0.00	0.00	0.00	0.00
6	1.54	0.00	2.52	0.00	3.14	0.77	0.00	4.04	1.13
7	2.15	0.80	2.83	2.33	0.00	10.23	6.75	2.08	0.00
8	10.87	9.17	13.91	5.91	8.98	13.87	8.97	2.62	2.66
9	15.06	12.48	16.25	17.12	11.90	28.40	3.62	22.41	37.96
10 COMPLETELY SATISFIED	63.44	72.34	61.28	41.46	75.99	46.73	80.66	68.85	58.09
ZERO COMPLETELY DISSATISFIED	0.27	1.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DON'T KNOW	4.30	1.72	2.38	22.23	0.00	0.00	0.00	0.00	0.16
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<PP5D> Why do you say that?									
Professional Installation/Good Rating	74.82	61.06	82.79	50.85	93.87	89.19	83.33	82.54	87.14
Not satisfied with service/Could have done something better	5.47	4.33	6.43	10.40	0.00	7.96	0.00	5.51	1.33
Questions/concerns from customer	4.35	6.24	3.30	5.72	3.14	1.49	6.75	7.58	0.00
Installed themselves	9.66	23.99	6.32	5.03	0.94	0.00	0.00	0.10	10.41
Other	3.66	0.08	0.27	24.83	1.13	1.36	9.92	1.66	0.00
REFUSED	0.12	0.00	0.00	0.00	0.92	0.00	0.00	0.00	0.00
DON'T KNOW	1.92	4.31	0.90	3.18	0.00	0.00	0.00	2.61	1.13
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<PP5E> From your perspective, what if anything could be done to improve the quality of the installers' work?									
None	74.16	72.33	81.51	45.21	83.18	66.10	82.24	56.99	95.74
Professional Installation/Good Rating	3.16	1.04	3.90	3.84	1.93	13.04	0.52	10.24	2.44
Not satisfied with service/Could have done something better	1.93	2.17	0.34	5.89	1.40	5.08	7.32	3.49	0.00
Concerns/opinoins/Questions realating to installer's work	10.38	14.77	7.95	16.68	4.19	13.47	0.00	11.60	1.33
Installed themselves	0.84	2.67	0.00	1.24	0.00	0.00	0.00	0.00	0.00
Other	0.38	0.09	0.00	1.05	0.00	2.31	9.92	0.00	0.00
REFUSED	0.31	0.05	0.15	1.83	0.00	0.00	0.00	0.00	0.00
DON'T KNOW	8.83	6.90	6.13	24.27	9.29	0.00	0.00	17.68	0.49
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<PP6> The program you participated in was run by an implementer; has your organization participated in energy efficiency programs run by a utility in the past three years?									
YES	13.07	18.17	0.00	0.00	17.47	9.28	0.00	0.00	0.00
NO	74.49	81.62	0.00	0.00	17.23	88.23	0.00	0.00	0.00
DON'T KNOW	12.44	0.21	0.00	0.00	65.29	2.48	0.00	0.00	0.00
n	*89*	*40*	*0*	*0*	*4*	*45*	*0*	*0*	*0*
<PP8> Please consider your recent experience with the program run by the implementer versus your past experience with the utility run programs. Are there any differences between the two that stand out? Any there attributes or services that seemed better in one or the other?									

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
No differences	58.17	66.60	0.00	0.00	0.00	83.05	0.00	0.00	0.00
Other	41.04	31.30	0.00	0.00	100.00	16.95	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	0.79	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*9*	*4*	*0*	*0*	*1*	*4*	*0*	*0*	*0*
<PP10> The program you participated in was run by &IOU.; have you participated in programs run by governments, institutions, or other independent firms in the past three years? (select all that apply)									
Local Government	3.64	3.67	1.17	3.26	12.61	10.92	0.00	0.00	11.57
State Government or Institution	1.23	3.29	0.66	0.00	0.65	0.00	0.00	0.00	0.00
Independent Firm	0.87	0.50	0.66	3.19	0.00	0.00	0.00	2.63	3.03
Other	86.34	89.42	85.16	87.44	81.18	89.08	100.00	97.37	82.77
Refused	2.10	0.00	4.65	0.07	0.00	0.00	0.00	0.00	0.00
Don't Know	6.54	3.62	9.02	6.05	5.55	0.00	0.00	0.00	2.63
n	*477*	*95*	*135*	*105*	*34*	*6*	*32*	*39*	*31*
<PP12> Please consider your experiences with the program run by an independent firm versus your recent experience with the utility run program. Are there any differences between the two that stand out? Are there attributes or services that seemed better in one or the other?									
No differences	34.20	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	64.79	100.00	0.00	100.00	0.00	0.00	0.00	33.29	100.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	1.00	0.00	0.00	0.00	0.00	0.00	0.00	66.71	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
n	*6*	*1*	*1*	*1*	*0*	*0*	*0*	*2*	*1*
<PP14> Please consider your experiences with the program run by a government or institution versus your recent experience with the utility run program. Are there any differences between the two that stand out? Are there attributes that seemed better in one or the other?									
No differences	48.19	55.58	56.83	0.00	48.67	100.00	0.00	0.00	100.00
PG&E was simpler / easier to work with. Recommended.	33.00	39.21	0.00	0.00	46.40	0.00	0.00	0.00	0.00
Edison offers better service and support. Recommended.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SDG&E was quicker / easier to work with. Recommended.	8.68	0.00	0.00	68.46	4.93	0.00	0.00	0.00	0.00
SoCalGas was simpler / easier to work with. Recommended.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	8.19	0.00	43.17	31.54	0.00	0.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	1.94	5.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*18*	*7*	*2*	*3*	*3*	*1*	*0*	*0*	*2*
<PP18> How significant was this difference, would you say…									
Very significant	39.72	25.49	100.00	75.65	0.00	0.00	0.00	0.00	29.84
Somewhat significant	20.31	12.65	0.00	24.35	100.00	14.22	0.00	100.00	70.16
Not very significant	39.75	61.42	0.00	0.00	0.00	85.78	0.00	0.00	0.00
Don't Know	0.22	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
n	*20*	*7*	*1*	*3*	*1*	*4*	*0*	*1*	*3*
<PP22> How significant was this difference, would you say…									
Very significant	71.00	72.34	100.00	68.46	77.52	24.03	0.00	100.00	79.26
Somewhat significant	17.66	10.07	0.00	31.54	14.25	34.71	0.00	0.00	20.74
Not very significant	6.61	17.60	0.00	0.00	8.23	0.00	0.00	0.00	0.00
Don't Know	4.73	0.00	0.00	0.00	0.00	41.27	0.00	0.00	0.00
n	*21*	*6*	*1*	*3*	*3*	*4*	*0*	*1*	*3*
<PP26> How significant was this difference, would you say…									
Very significant	38.92	13.22	0.00	50.50	100.00	18.63	0.00	100.00	30.50
Somewhat significant	26.12	7.65	100.00	49.50	0.00	16.08	0.00	0.00	69.50
Not very significant	32.17	78.81	0.00	0.00	0.00	24.03	0.00	0.00	0.00
Don't Know	2.79	0.31	0.00	0.00	0.00	41.27	0.00	0.00	0.00
n	*22*	*7*	*2*	*4*	*2*	*4*	*0*	*1*	*2*
<PP3> Do you have any comments on the current incentive structure of the program?									
No Comments	81.69	82.49	79.97	87.00	79.31	83.80	89.13	75.97	94.90
Highly Satisfied with program / High Ratings on program	5.04	5.08	4.04	10.57	2.42	2.44	10.87	17.41	2.46
Recommending other options based on experience	0.32	0.00	0.74	0.00	0.00	0.00	0.00	0.00	0.00
Questions / Concerns from customer	9.02	10.88	7.15	2.37	17.75	13.76	0.00	6.61	2.64

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Not satisfied with service / Could have done something better	0.01	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
Other	3.45	0.00	8.06	0.00	0.00	0.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	0.49	1.55	0.04	0.00	0.52	0.00	0.00	0.00	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<LT3> During this time, how many times has your organization participated in this (these) program(s)?									
7 to 10 times, or more	10.18	20.61	0.00	11.36	15.19	0.00	4.93	74.38	0.00
4 to 7 times	16.09	24.98	16.99	3.85	0.00	0.00	0.82	0.00	0.26
2 to 4 times	37.75	23.73	40.51	38.48	67.60	0.00	44.19	0.00	72.33
less than 2 times	23.21	25.32	17.22	46.01	16.10	88.40	50.06	25.62	11.18
DON'T KNOW	12.77	5.36	25.28	0.30	1.10	11.60	0.00	0.00	16.22
n	*107*	*29*	*19*	*25*	*8*	*3*	*10*	*3*	*10*
<CA6> What type of equipment did you install through this (these) program(s)?									
Indoor Lighting	94.42	93.64	95.07	95.57	93.24	100.00	100.00	100.00	91.44
Cooling Equipment	17.47	19.83	16.61	14.88	15.36	20.31	0.00	74.38	66.48
Natural Gas Equipment (water heater / furnace / appliances)	10.83	28.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Insulation or Windows	0.03	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Refrigeration	1.66	4.25	0.00	0.23	0.00	0.00	2.67	0.00	0.00
Industrial Process Equipment	2.62	6.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Greenhouse Heat Curtains	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Food Service Equipment	0.35	0.00	0.00	3.68	0.00	0.00	0.00	0.00	14.26
Outdoor Lighting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Occupancy Sensors	0.08	0.00	0.00	0.00	0.00	0.00	6.30	0.00	0.00
Thermostats	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Outdoor Lighting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Irrigation Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LED Lighting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Panel	0.77	0.00	0.00	0.00	5.13	0.00	0.00	0.00	0.00
HVAC	0.03	0.00	0.00	0.00	0.00	0.00	2.06	0.00	0.00
Other	5.65	13.02	0.00	2.11	3.73	0.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	2.78	2.11	4.84	0.00	1.63	0.00	0.00	0.00	2.83
n	*99*	*27*	*17*	*24*	*7*	*2*	*10*	*3*	*9*
<LT6> What factors led you to participate in this (these) program(s)?									
Rebate / Incentive	48.71	54.53	60.29	8.65	18.57	100.00	27.11	19.72	10.92
Energy Savings	2.65	4.21	0.02	6.72	0.00	0.00	42.61	74.38	62.84
Cost Savings	15.80	20.12	0.00	1.04	65.52	0.00	0.82	0.00	16.48
Quality of Equipment	1.23	0.00	0.00	14.13	0.00	0.00	13.22	0.00	0.00
Payback	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ease of Program Participation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Recommendation from Utility Rep or Contractor	2.57	0.00	0.00	24.63	5.08	0.00	0.00	0.00	0.00
To improve equipment performance	1.09	0.00	0.65	10.59	0.00	0.00	0.00	0.00	2.08
To improve the comfort level of the facility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To improve efficiency and effectiveness	12.71	20.50	4.21	31.15	9.73	0.00	9.95	0.00	21.02
Free program	2.41	1.15	0.08	25.67	0.00	0.00	0.00	0.00	0.00
Other	6.51	4.07	5.32	33.54	0.00	17.95	8.36	5.90	0.51
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.37
Don't Know	19.32	9.68	37.61	0.71	1.10	0.00	0.00	0.00	2.37
n	*107*	*29*	*19*	*25*	*8*	*3*	*10*	*3*	*10*
<LT7> And exactly how did that experience help to convince you to install this lighting equipment?									
Positive Experience	26.47	18.57	15.48	46.49	74.28	0.00	7.12	19.72	6.88
To reduce energy use/power outages	0.66	0.69	0.00	0.40	0.00	0.00	35.83	0.00	0.00
To improve the comfort level of the facility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
To reduce energy costs	6.26	11.12	4.67	2.42	0.00	0.00	4.92	74.38	64.50
Rebates / Discounts / Incentives / ROI	6.04	6.02	8.73	0.00	0.00	0.00	24.03	0.00	16.22
To improve equipment performance	0.81	0.00	0.00	10.59	0.00	0.00	0.00	0.00	0.00
To update to the latest technology	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100% paid for	0.20	0.42	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Not satisfied with service / Could have done something better	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	36.16	52.32	38.14	0.78	5.30	100.00	16.94	5.90	0.51
Refused	2.02	0.00	0.00	0.00	15.19	0.00	0.00	0.00	0.26

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Don't Know	24.17	10.87	37.68	39.73	10.52	0.00	13.22	0.00	11.88
n	*107*	*29*	*19*	*25*	*8*	*3*	*10*	*3*	*10*
<LT8> Have these programs had any long-term influence on your organization's energy efficiency related practices and policies that go beyond the immediate effect of incentives on individual projects?									
YES	49.18	74.12	0.00	93.78	0.00	0.00	14.27	100.00	100.00
NO	13.54	9.70	27.41	6.22	0.00	0.00	0.00	0.00	0.00
REFUSED	7.67	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
DON'T KNOW	29.61	16.18	72.59	0.00	0.00	0.00	85.73	0.00	0.00
n	*18*	*7*	*2*	*4*	*1*	*0*	*2*	*1*	*1*
<LT9> Has your organization developed a specification policy for the selection of energy-efficient equipment?									
YES	19.92	11.90	0.00	100.00	0.00	0.00	0.00	100.00	100.00
NO	80.08	88.10	0.00	0.00	0.00	0.00	100.00	0.00	0.00
n	*9*	*4*	*0*	*2*	*0*	*0*	*1*	*1*	*1*
<LT10> Has your organization assigned responsibility for controlling energy usage and costs to any of the following?									
An in-house staff person	93.00	100.00	0.00	25.76	0.00	0.00	0.00	0.00	0.00
A group of staff OR	6.93	0.00	0.00	74.24	0.00	0.00	0.00	100.00	100.00
NONE OF THESE	0.07	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00
n	*9*	*4*	*0*	*2*	*0*	*0*	*1*	*1*	*1*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<LT11> Does your organization have any internal incentive or reward policies for business units or staff responsible for managing energy costs?									
YES	18.35	19.51	0.00	0.00	0.00	0.00	0.00	100.00	0.00
NO	81.65	80.49	0.00	100.00	0.00	0.00	100.00	0.00	100.00
n	*9*	*4*	*0*	*2*	*0*	*0*	*1*	*1*	*1*
<LC7> How do these incentive/reward structures work?									
Other	100.00	100.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don’t Know	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*2*	*1*	*0*	*0*	*0*	*0*	*0*	*1*	*0*
<CA2> In marketing materials or in communications with customers, does your company highlight the ways in which your business is environmentally conscious?									
YES	45.82	59.57	46.22	31.00	33.24	40.72	53.21	33.31	34.64
NO	42.04	37.16	29.27	67.39	64.43	50.07	46.79	66.23	65.36
DON'T KNOW	12.14	3.27	24.51	1.61	2.33	9.21	0.00	0.46	0.00
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<A3A> According to our records, your organization installed <XX> lighting measures through <XX> period, is this correct?									
YES - quantity correct	99.08	98.63	99.26	99.06	100.00	96.19	99.72	100.00	97.37
NO - change quantity	0.92	1.37	0.74	0.94	0.00	3.81	0.28	0.00	2.63

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<DEEM_INSTALL_DATE1_NU> Our records indicate that your organization installed/delamped <%LT_MEAS_1> ... on ... <%DEEM_INSTALL_DATE1>. Is this correct?									
YES	93.49	97.53	90.14	88.75	98.54	100.00	98.88	100.00	97.05
NO	0.07	0.00	0.02	0.46	0.00	0.00	0.00	0.00	0.32
Don't Know	6.44	2.47	9.84	10.79	1.46	0.00	1.12	0.00	2.63
n	*566*	*135*	*135*	*105*	*38*	*51*	*32*	*39*	*31*
<LI190A> Where did you install the LED outdoor lighting that you received through the program?									
Parking lots	81.83	0.00	0.00	0.00	81.83	0.00	0.00	0.00	0.00
Garages	2.21	0.00	0.00	0.00	2.21	0.00	0.00	0.00	0.00
Walkways	10.30	0.00	0.00	0.00	10.30	0.00	0.00	0.00	0.00
Patios / Outdoor Seating Areas	1.40	0.00	0.00	0.00	1.40	0.00	0.00	0.00	0.00
Outside Door	7.08	0.00	0.00	0.00	7.08	0.00	0.00	0.00	0.00
Refused	34.35	0.00	0.00	0.00	34.35	0.00	0.00	0.00	0.00
REFUSED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*38*	*0*	*0*	*0*	*38*	*0*	*0*	*0*	*0*
<LI191A> Where did you install the LED DOWNLIGHTING that you received through the program?									
Open Office	25.65	51.46	6.54	17.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Private Office	16.37	22.62	11.26	16.19	0.00	0.00	0.00	0.00	0.00
Hallways	41.56	55.01	33.91	27.95	0.00	0.00	0.00	0.00	0.00
Lobby	30.31	39.86	25.35	18.78	0.00	0.00	0.00	0.00	0.00
Stairwell	10.32	22.15	1.62	6.08	0.00	0.00	0.00	0.00	0.00
Kitchen/Break area	13.07	22.70	5.37	12.10	0.00	0.00	0.00	0.00	0.00
Restrooms	16.36	29.10	9.61	1.43	0.00	0.00	0.00	0.00	0.00
Dining	22.08	23.19	22.96	14.98	0.00	0.00	0.00	0.00	0.00
Retail Space	8.76	17.03	3.39	2.99	0.00	0.00	0.00	0.00	0.00
Conference Room	12.66	22.15	6.68	5.31	0.00	0.00	0.00	0.00	0.00
Warehouse	6.76	17.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Storage	7.57	17.07	1.35	1.15	0.00	0.00	0.00	0.00	0.00
Outdoor	12.68	25.53	4.59	2.74	0.00	0.00	0.00	0.00	0.00
Guest rooms	17.81	27.16	8.92	22.43	0.00	0.00	0.00	0.00	0.00
Other	28.60	28.92	25.52	39.78	0.00	0.00	0.00	0.00	0.00
REFUSED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DON'T KNOW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
n	*110*	*40*	*40*	*30*	*0*	*0*	*0*	*0*	*0*
<LI20A> What type of lighting was removed and replaced when you installed the lighting equipment through the program?									
High Performance T8	0.01	0.02	0.00	0.04	0.00	0.00	0.00	0.00	0.00
T8 Fluorescent Fixtures (1 in. diameter bulbs)	4.59	8.07	0.55	14.75	0.00	0.00	14.41	4.55	7.54
T10 fluorescent fixtures	3.20	0.26	4.65	5.81	2.21	0.00	0.00	0.00	2.66

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
T12 fluorescent fixtures	6.68	8.62	5.14	9.51	2.21	0.00	34.77	1.75	4.51
Compact HID (High Intensity Discharge) Fixtures	5.73	9.56	0.35	1.87	19.79	0.00	2.79	0.00	1.31
Screw-in Modular CFLs	3.85	9.67	1.97	2.18	0.00	0.00	0.00	14.98	35.17
Hardwired CFL Fixtures	1.61	0.57	3.30	0.00	0.00	0.00	0.00	0.00	0.00
Incandescent bulbs	41.14	28.47	53.05	36.74	37.39	0.00	0.59	17.68	0.32
CFL Exit Signs	1.75	2.30	2.57	0.00	0.00	0.00	0.00	0.00	0.00
LED Exit Signs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halogen bulbs	8.32	10.40	7.11	5.57	12.11	0.00	0.00	0.00	0.00
Reflectors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electronic Ballast	0.74	2.13	0.02	0.46	0.00	0.00	6.81	0.00	0.00
Magnetic Ballast	0.02	0.00	0.02	0.00	0.00	0.00	0.87	0.00	0.00
Manual Switches	0.26	0.00	0.00	0.00	0.00	0.00	0.00	37.50	70.09
Lighting Controls, Time Clock	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lighting Controls, Occupancy Sensor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.80
Lighting Controls, Bypass/Delay Timers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Timers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lighting Controls, Photocell	5.76	12.25	2.48	1.79	6.03	0.00	21.29	1.11	0.00
Other Fluorescent	5.31	4.18	8.76	0.70	0.00	0.00	15.30	0.00	0.00
Fat / Thick Tubes	0.75	2.20	0.00	0.09	0.00	0.00	9.99	0.48	0.00
Skinny / Thin Tubes	0.02	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
T5 Fixtures (5/8 in. diameter)	1.34	2.19	0.00	5.71	0.00	0.00	0.00	0.00	0.00
Screw-in LEDs	0.23	0.06	0.50	0.00	0.00	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Screw-in LEDs Reflector Lamps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Did not remove anything- additional equipment only	0.09	0.19	0.00	0.00	0.00	0.00	0.00	7.14	0.32
Other	6.64	5.00	0.84	26.02	10.22	0.00	0.00	14.26	15.77
Don't Know	13.60	6.80	19.28	7.10	16.67	0.00	1.13	0.46	1.18
n	*515*	*135*	*135*	*105*	*38*	*0*	*32*	*39*	*31*
<LI20B> What type of lighting equipment was removed and replaced when you installed the ...<%LT_MEAS_2> ...through the program?									
High Performance T8	0.37	0.00	0.00	0.00	6.32	0.00	0.00	0.00	1.48
T8 Fluorescent Fixtures (1 in. diameter bulbs)	12.20	4.75	9.75	21.63	30.83	0.00	16.25	7.67	11.83
T10 Fluorescent Fixtures	1.72	0.66	0.00	8.00	0.00	0.00	0.00	0.00	3.42
T12 Fluorescent Fixtures	11.37	9.30	9.90	12.23	9.80	49.91	41.02	5.62	26.16
Compact HID (High Intensity Discharge) Fixtures	0.14	0.34	0.00	0.00	0.00	0.00	0.00	8.94	0.37
Screw-in Modular CFLS	0.54	0.47	0.65	0.64	0.00	0.00	0.00	0.00	0.00
Hardwired CFL Fixtures	0.20	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Incandescent Bulbs	34.90	25.11	44.60	29.83	16.61	32.90	1.07	30.14	40.96
CFL Exit Signs	4.18	18.96	0.03	0.84	0.00	0.00	0.00	0.00	0.00
LED Exit Signs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halogen Bulbs	5.62	2.53	6.29	6.94	10.07	0.00	0.00	5.52	0.00
Reflectors	0.02	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00
Electronic Ballast	0.17	0.00	0.14	0.00	0.00	6.73	0.00	0.00	0.00
Magnetic Ballast	0.13	0.00	0.00	0.64	0.00	0.00	0.00	0.00	0.00
Manual Switches	0.75	0.00	0.58	0.52	0.00	0.00	20.56	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Lighting Controls, Time Clock	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lighting Controls, Occupancy Sensor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lighting Controls, Bypass / Delay Timers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lighting Controls, Photocell	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Fluorescent	3.08	6.89	0.91	4.84	2.16	0.00	1.53	6.08	10.39
Fat / Thick Tubes	1.67	0.19	1.45	2.94	0.00	0.00	16.04	7.06	2.96
Skinny / Thin Tubes	2.09	1.60	3.01	1.32	0.00	0.00	0.00	0.55	1.48
T5 Fixtures (5/8 in. diameter)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Screw-in LEDs	1.54	0.00	0.00	7.87	0.00	0.00	0.00	0.00	0.00
Screw-in LEDs Reflector Lamps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LED Fixtures or Panels (replacement for linear fixtures)	0.60	0.00	1.22	0.00	0.00	0.00	0.00	0.00	0.00
Did not remove anything	2.56	10.62	0.64	0.00	0.00	0.00	0.00	0.00	0.00
Other	10.76	1.64	18.12	3.20	12.22	0.00	3.54	12.32	0.37
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don’t know	12.00	16.03	5.66	24.70	11.99	10.47	0.00	16.11	0.58
n	*366*	*52*	*109*	*92*	*13*	*14*	*25*	*32*	*29*
<LI21A> Were the HID lamps you removed High pressure Sodium, Metal Halide, Mercury Vapor or Incandescent?									
High Pressure Sodium	41.21	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
Mercury Vapor	40.56	96.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Incandescent	11.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00
DON'T KNOW	7.24	3.75	100.00	0.00	0.00	0.00	0.00	0.00	100.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
n	*9*	*3*	*1*	*2*	*2*	*0*	*0*	*0*	*1*
<LI22A> Approximately how old was the equipment that was removed and replaced? Would you say it was…?									
Less than 5 years old	42.79	47.77	48.71	58.19	5.07	0.00	1.71	30.88	3.28
Between 5 and 10 years old	25.54	38.03	20.23	26.11	17.23	0.00	29.68	30.22	45.76
Between 10 and 15 years old or	12.15	10.35	5.50	3.14	44.32	0.00	15.10	30.38	22.47
More than 15 years old	9.82	1.89	11.66	11.95	16.01	0.00	20.41	4.06	24.33
DON'T KNOW	9.70	1.96	13.90	0.62	17.37	0.00	33.09	4.45	4.15
n	*513*	*135*	*134*	*105*	*38*	*0*	*32*	*38*	*31*
<LI23A> How would you describe the removed equipment's condition? Would you say they were in...?									
Poor Condition	11.52	12.62	2.92	7.58	39.94	0.00	14.61	19.97	6.01
Fair Condition	35.83	44.85	37.69	28.31	19.69	0.00	32.39	42.76	68.15
Good Condition	45.57	39.44	50.96	60.68	26.96	0.00	40.53	33.77	24.66
Don’t Know	7.08	3.09	8.44	3.43	13.42	0.00	12.47	3.49	1.18
n	*513*	*135*	*134*	*105*	*38*	*0*	*32*	*38*	*31*
<LI20C> What type of lighting equipment was removed and replaced when you installed the ...<%LT_MEAS_3> ...through the program?									
High Performance T8	0.13	0.00	0.00	0.00	0.00	0.00	0.00	17.58	0.00
T8 Fluorescent Fixtures (1 in. diameter bulbs)	21.14	0.37	28.57	22.97	33.37	0.00	0.00	0.00	5.66
T10 Fluorescent Fixtures	3.46	1.56	0.12	9.76	0.00	0.00	0.00	0.00	0.00
T12 Fluorescent Fixtures	8.85	3.23	5.42	13.22	7.83	0.00	54.86	38.87	68.99

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Compact HID (High Intensity Discharge) Fixtures	0.15	0.11	0.00	0.00	0.00	0.00	0.00	17.58	0.00
Screw-in Modular CFLS	14.29	44.46	14.60	2.02	0.00	0.00	0.00	0.00	0.00
Hardwired CFL Fixtures	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Incandescent Bulbs	21.80	9.10	25.68	28.20	5.15	38.06	2.35	4.66	15.30
CFL Exit Signs	0.97	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
LED Exit Signs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halogen Bulbs	5.39	0.00	8.57	0.45	27.36	0.00	0.00	0.00	0.00
Reflectors	1.23	0.00	0.00	3.81	0.00	0.00	0.00	0.00	0.00
Electronic Ballast	0.19	0.00	0.47	0.01	0.00	0.00	0.00	0.00	0.00
Magnetic Ballast	0.07	0.00	0.00	0.00	0.00	0.00	4.56	0.00	0.00
Manual Switches	1.29	0.00	0.55	3.30	0.00	0.00	0.00	0.00	0.00
Lighting Controls, Time Clock	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lighting Controls, Occupancy Sensor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lighting Controls, Bypass / Delay Timers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lighting Controls, Photocell	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Fluorescent	4.73	15.93	3.30	0.06	3.69	0.00	9.01	27.97	2.53
Fat / Thick Tubes	5.97	0.64	9.44	5.50	0.00	0.00	18.97	0.00	4.44
Skinny / Thin Tubes	1.86	0.00	0.00	5.41	0.00	0.00	7.05	0.00	2.22
T5 Fixtures (5/8 in. diameter)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Screw-in LEDs	3.05	0.00	0.06	9.40	0.00	0.00	0.00	0.00	0.00
Screw-in LEDs Reflector Lamps	0.02	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LED Fixtures or Panels (replacement for linear fixtures)	1.75	0.00	0.00	0.00	26.38	0.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Did not remove anything	0.03	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Other	2.63	0.00	2.22	3.17	10.80	0.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	17.01	24.45	7.96	24.01	11.81	61.94	7.76	37.66	0.86
n	*191*	*30*	*54*	*58*	*8*	*3*	*16*	*8*	*14*
<LI22C> Approximately how old was the equipment that was removed and replaced?									
Less than 5 years old	37.38	74.33	28.00	30.06	44.17	0.00	2.24	42.14	69.69
Between 5 and 10 years old	33.15	1.02	49.35	30.83	31.05	38.06	43.56	11.65	17.93
Between 10 and 15 years old	4.09	0.92	4.12	3.99	12.97	3.18	5.51	0.00	4.21
More than 15 years old	19.33	2.81	17.86	34.64	0.00	0.00	22.67	20.20	7.89
Don't Know	6.05	20.92	0.67	0.48	11.81	58.76	26.01	26.01	0.27
n	*191*	*30*	*54*	*58*	*8*	*3*	*16*	*8*	*14*
<HB2> Just to double check, was any of the linear fluorescent lighting installed through the program at a height of 13 or more feet above the area it is meant to light? This would qualify as HIGH BAY lighting.									
YES	0.73	23.11	0.03	0.19	0.00	0.00	0.00	0.00	0.63
NO	98.02	76.89	96.39	99.81	100.00	100.00	100.00	100.00	99.37
DON'T KNOW	1.26	0.00	3.58	0.00	0.00	0.00	0.00	0.00	0.00
n	*132*	*6*	*35*	*34*	*1*	*1*	*17*	*18*	*20*
<HB3> What is the main kind of linear bulbs located at this height?									

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
T8s	47.92	7.76	18.55	68.42	72.59	63.60	70.64	3.20	6.80
T5s	3.23	12.53	0.00	0.00	0.00	0.00	26.09	26.74	0.00
Other	31.63	0.00	72.22	26.63	0.00	0.00	3.18	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	18.22	79.70	9.24	4.95	27.41	36.41	16.07	70.06	93.20
n	*68*	*11*	*15*	*13*	*3*	*2*	*11*	*6*	*7*
<HB1a> Other than linear fluorescents, is any of the lighting installed through the program considered to be High Bay? (If needed, lighting higher than 13 ft)									
YES	32.38	28.91	25.43	20.81	73.01	2.34	24.60	61.86	6.84
NO	64.33	64.76	73.16	72.87	26.07	97.66	75.40	38.05	93.16
DON'T KNOW	3.29	6.33	1.42	6.32	0.92	0.00	0.00	0.09	0.00
n	*507*	*135*	*135*	*105*	*38*	*13*	*11*	*39*	*31*
<HB2A> What kind of High Bay Lighting is it?									
HID (High Intensity Discharge) High Pressure Sodium	1.90	0.77	0.00	12.14	2.16	0.00	0.00	0.00	0.00
HID Metal Halide	3.87	13.31	0.00	0.00	2.21	0.00	0.00	0.00	4.75
HID Mercury Vapor	0.76	0.02	0.00	5.69	0.84	0.00	0.00	0.00	19.21
HID - Don't know what type	33.11	38.85	21.89	8.32	46.91	0.00	25.46	70.64	44.29
CFLs	1.72	3.36	2.61	0.00	0.00	0.00	0.00	0.85	0.00
T5	0.14	0.00	0.00	0.00	0.00	0.00	49.85	0.00	0.00
T8	0.06	0.06	0.00	0.00	0.00	100.00	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
LED	30.09	33.92	32.68	41.41	22.17	0.00	0.00	10.69	0.00
Fluorescent - Don't Know what type	0.32	0.61	0.30	0.00	0.00	0.00	24.69	0.85	0.00
Other	12.76	3.89	29.90	13.83	0.71	0.00	0.00	0.00	0.00
Refused	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Don't Know	16.09	8.63	12.63	18.62	25.02	0.00	0.00	16.97	31.75
n	*138*	*47*	*27*	*18*	*24*	*1*	*3*	*12*	*6*
<DEL1a> As part of the retrofit you had done during your participation in Program did you have any delamping done?									
YES	12.65	26.81	5.85	6.35	29.99	0.00	40.01	0.00	1.51
NO	79.17	31.99	89.63	85.22	70.01	0.00	58.85	61.65	94.80
DON'T KNOW	8.19	41.20	4.52	8.42	0.00	0.00	1.14	38.35	3.69
n	*222*	*13*	*61*	*57*	*4*	*0*	*32*	*27*	*28*
<DEL2> Have you had "removal only" delamping done within your facility?									
YES	8.63	2.77	3.21	5.00	0.00	8.17	41.02	2.87	0.00
NO	61.55	97.23	4.86	95.00	83.54	91.83	58.98	97.13	100.00
DON'T KNOW	29.83	0.00	91.92	0.00	16.46	0.00	0.00	0.00	0.00
n	*95*	*11*	*9*	*5*	*4*	*51*	*11*	*3*	*1*
<DEL2a> What percent of the original fixtures within the retrofitted area were removed?									
0 Percent	33.05	100.00	0.00	0.00	0.00	34.30	41.75	0.00	0.00
Between 0 and 15 Percent	13.77	0.00	0.00	100.00	0.00	25.78	0.00	0.00	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
Between 15 and 30 Percent	3.56	0.00	0.00	0.00	0.00	0.00	8.70	0.00	0.00
Between 30 and 45 Percent	9.70	0.00	0.00	0.00	0.00	22.51	0.00	0.00	0.00
Between 60 and 80 Percent	7.27	0.00	61.86	0.00	0.00	0.00	0.00	0.00	0.00
Between 80 and 100 Percent	3.45	0.00	0.00	0.00	0.00	0.00	8.43	0.00	0.00
100 Percent	29.20	0.00	38.14	0.00	0.00	17.41	41.12	100.00	0.00
n	*15*	*1*	*3*	*1*	*0*	*5*	*4*	*1*	*0*
<DEL3> Have you had "remove and replace" delamping done within your facility?									
YES	27.24	52.61	0.00	2.36	78.98	39.66	25.15	97.13	0.00
NO	42.94	47.39	8.08	97.64	4.56	60.34	74.85	2.87	100.00
DON'T KNOW	29.83	0.00	91.92	0.00	16.46	0.00	0.00	0.00	0.00
n	*95*	*11*	*9*	*5*	*4*	*51*	*11*	*3*	*1*
<DEL3a> What type of fixtures were removed?									
T12 fluorescent fixtures	41.28	76.25	0.00	100.00	0.00	41.56	100.00	0.00	0.00
T8 fluorescent fixtures	5.68	0.00	0.00	0.00	0.00	8.57	0.00	0.00	0.00
T5 flourescent fixtures	3.41	0.00	0.00	0.00	0.00	5.14	0.00	0.00	0.00
HPS	2.65	14.06	0.00	0.00	0.00	0.00	0.00	40.34	0.00
Other	32.01	8.63	0.00	0.00	69.65	32.44	0.00	0.00	0.00
DON'T KNOW	14.98	1.06	0.00	0.00	30.35	12.29	0.00	59.66	0.00
n	*30*	*5*	*0*	*1*	*2*	*19*	*1*	*2*	*0*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<DEL3b> What type of fixtures were installed?									
T8 fluorescent fixtures	43.94	93.68	0.00	100.00	0.00	41.23	100.00	40.34	0.00
Other	33.89	5.26	0.00	0.00	30.35	44.09	0.00	0.00	0.00
DON'T KNOW	22.16	1.06	0.00	0.00	69.65	14.68	0.00	59.66	0.00
n	*30*	*5*	*0*	*1*	*2*	*19*	*1*	*2*	*0*
<DEL3c> How many lamps per fixture were present prior to the delamping retrofit?									
1	4.21	0.00	0.00	0.00	0.00	6.35	0.00	0.00	0.00
2	24.58	91.37	0.00	0.00	0.00	27.34	0.00	0.00	0.00
3	0.81	0.00	0.00	0.00	0.00	1.22	0.00	0.00	0.00
4	19.40	5.26	0.00	0.00	69.65	11.26	0.00	40.34	0.00
8	1.29	0.00	0.00	0.00	0.00	1.95	0.00	0.00	0.00
DON'T KNOW	49.72	3.37	0.00	100.00	30.35	51.90	100.00	59.66	0.00
n	*30*	*5*	*0*	*1*	*2*	*19*	*1*	*2*	*0*
<DEL3d> How many lamps per fixture are present now, after the delamping retrofit?									
1	8.85	0.00	0.00	0.00	0.00	13.36	0.00	0.00	0.00
2	27.51	96.63	0.00	0.00	0.00	28.69	0.00	40.34	0.00
3	9.92	0.00	0.00	0.00	69.65	0.00	0.00	0.00	0.00
4	3.86	0.00	0.00	0.00	0.00	5.82	0.00	0.00	0.00
8	6.63	0.00	0.00	0.00	0.00	10.01	0.00	0.00	0.00
DON'T KNOW	43.24	3.37	0.00	100.00	30.35	42.12	100.00	59.66	0.00

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
n	*30*	*5*	*0*	*1*	*2*	*19*	*1*	*2*	*0*
<DEL3E> Approximately how old were the fixtures that were removed and replaced as a result of this "remove and replace" delamping? Would you say…									
Less than 5 years old	7.98	0.00	0.00	0.00	0.00	12.04	0.00	0.00	0.00
Between 6 and 10 years old	18.31	1.06	0.00	0.00	0.00	15.53	100.00	0.00	0.00
Between 10 and 15 years old	6.18	14.06	0.00	0.00	0.00	4.14	0.00	59.66	0.00
More than 15 years old	61.62	81.51	0.00	100.00	100.00	59.71	0.00	40.34	0.00
DON'T KNOW	5.91	3.37	0.00	0.00	0.00	8.57	0.00	0.00	0.00
n	*30*	*5*	*0*	*1*	*2*	*19*	*1*	*2*	*0*
<DEL3G> Approximately what percentage of the fixtures that were removed and replaced were broken or not working prior to the "remove and replace" delamping?									
0 Percent	64.64	17.43	0.00	100.00	100.00	57.94	100.00	59.66	0.00
Between 0 and 15 Percent	7.99	5.26	0.00	0.00	0.00	11.51	0.00	0.00	0.00
Between 15 and 30 Percent	3.48	1.06	0.00	0.00	0.00	5.14	0.00	0.00	0.00
Between 30 and 45 Percent	13.46	76.25	0.00	0.00	0.00	12.15	0.00	0.00	0.00
Between 45 and 60 Percent	4.38	0.00	0.00	0.00	0.00	6.61	0.00	0.00	0.00
Don’t Know	6.05	0.00	0.00	0.00	0.00	6.65	0.00	40.34	0.00
n	*30*	*5*	*0*	*1*	*2*	*19*	*1*	*2*	*0*
<DEL4> Have you had a delamping retrofit to reduce the number of lamps per fixture within your facility?									

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
YES	30.49	26.37	4.86	92.64	0.00	46.34	30.90	0.00	0.00
NO	38.50	73.63	3.21	7.36	59.57	53.66	69.10	100.00	100.00
DON'T KNOW	31.00	0.00	91.92	0.00	40.43	0.00	0.00	0.00	0.00
n	*95*	*11*	*9*	*5*	*4*	*51*	*11*	*3*	*1*
<DEL4a> How many lamps per fixture were present prior to the delamping retrofit?									
1 to 10	82.73	93.29	100.00	8.13	0.00	95.60	86.15	0.00	0.00
51 to 100	17.27	6.71	0.00	91.87	0.00	4.40	13.85	0.00	0.00
n	*30*	*5*	*4*	*3*	*0*	*14*	*4*	*0*	*0*
<DEL4b> How many lamps per fixture are present now, after the delamping retrofit?									
1 to 10	85.57	93.29	100.00	8.13	0.00	100.00	83.84	0.00	0.00
51 to 100	14.43	6.71	0.00	91.87	0.00	0.00	16.16	0.00	0.00
n	*30*	*5*	*4*	*3*	*0*	*14*	*4*	*0*	*0*
<DEL5> Is the amount of lighting better, worse, or the same than before your delamping job?									
Better	76.53	80.20	98.89	95.43	83.54	60.35	61.23	100.00	100.00
Worse	3.79	0.00	0.00	2.36	0.00	4.91	16.87	0.00	0.00
Same	14.74	19.80	1.11	2.21	0.00	25.68	21.91	0.00	0.00
DON'T KNOW	4.93	0.00	0.00	0.00	16.46	9.06	0.00	0.00	0.00
n	*95*	*11*	*9*	*5*	*4*	*51*	*11*	*3*	*1*

	ALL	PGE LED (%)	SCE LED (%)	SDGE LED (%)	LED OUTDOOR (%)	PGE DELAMP (%)	SCE DELAMP (%)	SCE OCC (%)	SDGE OCC (%)
<DEL11> Did you install additional lighting equipment to increase the amount of lighting in the delamped area(s)?									
YES	72.85	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
NO	17.89	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00
DON'T KNOW	9.27	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
n	*6*	*0*	*0*	*1*	*1*	*3*	*1*	*0*	*0*

APPENDIX F MEASURE NAME TO ESPI MEASURE MAPPING

PA	Measure Group	Measure Name	ESPI Measure
PGE	Lighting Indoor CFL > 30 Watts	42 Watt Int Screw-In CFL	CFL
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 10w To <11w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 11w To< 12w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 12w To <13w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 13w To <14w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 14w To <15w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 15w To <16w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 16w To <17w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 17w To <18w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 18w To <19w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 19w To <20w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 20w To <21w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 21w To <22w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 22w To <23w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 24w To <25w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And	LED_DOWNLIGHT

PA	Measure Group	Measure Name	ESPI Measure
		Recssd Dwnlight Install = 8w To <9w LED	
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install = 9w To <10w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surf Pendt Track ACcnt And Recssd Dwnlight Install >= 25w LED	LED_DOWNLIGHT
PGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight: Install 22 To <23w	LED_DOWNLIGHT
PGE	Lighting Indoor LED Lamp	LED A-Lamp 10 To < 11 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 11 To < 12 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 12 To < 13 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 13 To < 14 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 14 To < 15 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 15 To < 16 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 16 To < 17 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 17 To < 18 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 18 To < 19 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 19 To < 20 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 20 To < 21 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 23 To < 24 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 8 To < 9 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp 9 To < 10 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED A-Lamp < 8 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED Candelabra >=3 To <=5	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED Candelabra: <3 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED Globe: <3 Watts	LED_LAMP
PGE	Lighting Indoor LED Lamp	LED Globe: >=3 To <=10 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Mr-16 < 6 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Mr-16 = 10 To <11 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Mr-16 = 11 To <12 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Mr-16 = 6 To <7 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Mr-16 = 8 To <9 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Mr-16 = 9 To <10 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Mr-16 =7 To <8 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par20: <= 11 Watts	LED_LAMP

PA	Measure Group	Measure Name	ESPI Measure
PGE	Lighting Indoor LED Reflector Lamp	LED Par30 < 10 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par30 = 10 To <11 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par30 = 11 To <12 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par30 = 12 To <13 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par30 = 13 To <14 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par30 = 14 To <15 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par30 = 15 To <16 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par30 = 19 To <20 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 < 12 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 12 To <13 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 13 To <14 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 14 To <15 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 15 To <16 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 16 To <17 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 17 To <18 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 18 To <19 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 19 To <20 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 20 To <21 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 21 To <22 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 23 To <24 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 25 To <26 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 = 26 To <27 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED Par38 >= 27 Watts	LED_LAMP

PA	Measure Group	Measure Name	ESPI Measure
PGE	Lighting Indoor LED Reflector Lamp	LED R-Br - 11 To <14 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED R-Br - 14 To <= 22 Watts	LED_LAMP
PGE	Lighting Indoor LED Reflector Lamp	LED R-Br - 5 To <11 Watts	LED_LAMP
PGE	Lighting Indoor Linear Fluorescent Delamping	T12 Delamping W Lamps And Ballast Retrofit 2l 4ft T12 To 1l 4ft T8	DELAMP
PGE	Lighting Indoor Linear Fluorescent Delamping	T12 Delamping W Lamps And Ballast Retrofit 2l 8ft T12 To 1l 8ft T8	DELAMP
PGE	Lighting Indoor Linear Fluorescent Delamping	T12 Delamping W Lamps And Ballast Retrofit 2l 8ft T12 To 2l 4ft T8	DELAMP
PGE	Lighting Indoor Linear Fluorescent Delamping	T12 Delamping W Lamps And Ballast Retrofit 3l 4ft T12 To 1l 4ft T8	DELAMP
PGE	Lighting Indoor Linear Fluorescent Delamping	T12 Delamping W Lamps And Ballast Retrofit 3l 4ft T12 To 2l 4ft T8	DELAMP
PGE	Lighting Indoor Linear Fluorescent Delamping	T12 Delamping W Lamps And Ballast Retrofit 4l 4ft T12 To 2l 4ft T8	DELAMP
PGE	Lighting Indoor Linear Fluorescent Delamping	T12 Delamping W Lamps And Ballast Retrofit 4l 4ft T12 To 3l 4ft T8	DELAMP
PGE	Lighting Indoor Linear Fluorescent Delamping	T12 Delamping W Lamps And Ballast Retrofit 4l 8ft T12 To 2l 8ft T8	DELAMP
PGE	Lighting Indoor Linear Fluorescent Delamping	T12 Delamping W Lamps And Ballast Retrofit 4l 8ft T12 To 4l 4ft T8	DELAMP
PGE	Lighting Outdoor LED Fixture	LED Outdoor Area Lighting - Install 0-50 W Fixture	LED_OUTDOORFIXT
PGE	Lighting Outdoor LED Fixture	LED Outdoor Area Lighting - Install 111-150 W Fixture	LED_OUTDOORFIXT
PGE	Lighting Outdoor LED Fixture	LED Outdoor Area Lighting - Install 151-192 W Fixture	LED_OUTDOORFIXT
PGE	Lighting Outdoor LED Fixture	LED Outdoor Area Lighting - Install 193-225 W Fixture	LED_OUTDOORFIXT
PGE	Lighting Outdoor LED Fixture	LED Outdoor Area Lighting - Install 226-265 W Fixture	LED_OUTDOORFIXT
PGE	Lighting Outdoor LED Fixture	LED Outdoor Area Lighting - Install 266-500 W Fixture	LED_OUTDOORFIXT
PGE	Lighting Outdoor LED Fixture	LED Outdoor Area Lighting - Install 501-750 W Fixture	LED_OUTDOORFIXT

PA	Measure Group	Measure Name	ESPI Measure
PGE	Lighting Outdoor LED Fixture	LED Outdoor Area Lighting - Install 51-70 W Fixture	LED_OUTDOORFIXT
PGE	Lighting Outdoor LED Fixture	LED Outdoor Area Lighting - Install 71-110 W Fixture	LED_OUTDOORFIXT
PGE	Lighting Outdoor LED Streetlight	LED Street Lighting - Install 0-50 W Fixture	LED_STREETLIGHT
PGE	Lighting Outdoor LED Streetlight	LED Street Lighting - Install 111-150 W Fixture	LED_STREETLIGHT
PGE	Lighting Outdoor LED Streetlight	LED Street Lighting - Install 151-192 W Fixture	LED_STREETLIGHT
PGE	Lighting Outdoor LED Streetlight	LED Street Lighting - Install 193-225 W Fixture	LED_STREETLIGHT
PGE	Lighting Outdoor LED Streetlight	LED Street Lighting - Install 226-265 W Fixture	LED_STREETLIGHT
PGE	Lighting Outdoor LED Streetlight	LED Street Lighting - Install 51-70 W Fixture	LED_STREETLIGHT
PGE	Lighting Outdoor LED Streetlight	LED Street Lighting - Install 71-110 W Fixture	LED_STREETLIGHT
PGE	Lighting Outdoor LED Streetlight	LED Street Lighting - Replace 101 To 150 W Lamp With LED	LED_STREETLIGHT
SCE	Lighting Indoor Controls Wall Or Ceiling Mounted Occupancy Sensor	Wall Mounted Occupancy Sensor Control	OCCUPANCY
SCE	Lighting Indoor Controls Wall Or Ceiling Mounted Occupancy Sensor	Wall Or Ceiling Mounted Lighting Sensor =500 Watts Controls	OCCUPANCY
SCE	Lighting Indoor Controls Wall Or Ceiling Mounted Occupancy Sensor	<500 Watts Wall Or Ceiling Mounted Battery Powered Wireless Lighting Sensor Control	OCCUPANCY
SCE	Lighting Indoor Controls Wall Or Ceiling Mounted Occupancy Sensor	>=500 Watts Wall Or Ceiling Mounted Battery Powered Wireless Lighting Sensor Control	OCCUPANCY
SCE	Lighting Indoor Controls Wall Or Ceiling Mounted Occupancy Sensor	Wall Or Ceiling Mounted Lighting Sensor <500 Watts Control	OCCUPANCY
SCE	Lighting Indoor Fixture Integrated Occupancy Sensor	Integrated Occupancy Sensor (Fixture Wattage < 150 Watts) Controls	OCCUPANCY
SCE	Lighting Indoor Fixture Integrated Occupancy Sensor	Integrated Occupancy Sensor (Fixture Wattage >= 150 Watts) Controls	OCCUPANCY
SCE	Lighting Indoor LED Fixture	= 15 Watt Down Light (Non Res) LED Replacing 40-100 Watts Incandescent Lighting	LED_DOWNLIGHT
SCE	Lighting Indoor LED Lamp	10 Watt To < 11 Watt A-Lamp LED	LED_LAMP
SCE	Lighting Indoor LED Lamp	16 Watt To < 17 Watt A-Lamp	LED_LAMP

PA	Measure Group	Measure Name	ESPI Measure
		LED	
SCE	Lighting Indoor LED Lamp	17 Watt To < 18 Watt A-Lamp LED	LED_LAMP
SCE	Lighting Indoor LED Lamp	19 Watt To < 20 Watt A-Lamp LED	LED_LAMP
SCE	Lighting Indoor LED Lamp	3 Watt To < 4 Watt Candelabra LED	LED_LAMP
SCE	Lighting Indoor LED Lamp	< 10 Watt A-Lamp (Hotel/Motel) LED	LED_LAMP
SCE	Lighting Indoor LED Lamp	< 8 Watt A-Lamp LED	LED_LAMP
SCE	Lighting Indoor LED Lamp	> 10 To 30 Watt A-Lamp (Hotel/Motel) LED	LED_LAMP
SCE	Lighting Indoor LED Lamp	> 10 To 30 Watt A-Lamp LED	LED_LAMP
SCE	Lighting Indoor LED Lamp	>= 4 Watt Candelabra LED	LED_LAMP
SCE	Lighting Indoor LED Lamp	Up To 10 Watt A-Lamp LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	12 Watt To < 13 Watt Par30 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	16 Watt To < 17 Watt Par38 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	18 Watt To < 19 Watt Par38 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	19 Watt To < 20 Watt Par38 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	26 Watt To < 27 Watt Par38 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	6 Watt To < 7 Watt MR16 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	7 Watt To < 8 Watt MR16 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	7 Watt To < 8 Watt Par20 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	> 15 To 21 Watt Par30 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	> 17 To 25 Watt Par38 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	> 6 To 10 Watt MR16 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	> 8 To 12 Watt Par20 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	Up To 15 Watt Par30 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	Up To 17 Watt Par38 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector Lamp	Up To 6 Watt MR16 LED	LED_LAMP
SCE	Lighting Indoor LED Reflector	Up To 8 Watt Par20 LED	LED_LAMP

PA	Measure Group	Measure Name	ESPI Measure
	Lamp		
SCE	Lighting Indoor Linear Fluorescent Delamping	(1) 96in (1) Instant Start Ballast - Reduced Light Output T8 Linear Flourescent Replacing (2) 96in T12 Linear Fluorescent	DELAMP
SCE	Lighting Indoor Linear Fluorescent Delamping	(2) 48in (1) Instant Start Ballast - Normal Light Output T8 Linear Flourescent Replacing (3) 48in T12 Linear Fluorescent	DELAMP
SCE	Lighting Indoor Linear Fluorescent Delamping	(2) 48in (1) Instant Start Ballast - Normal Light Output W/ Reflectors T8 Linear Flourescent Replacing (3) 48in T12 Linear Fluorescent	DELAMP
SCE	Lighting Indoor Linear Fluorescent Delamping	(2) 48in (1) Instant Start Ballast - Normal Light Output W/ Reflectors T8 Linear Flourescent Replacing (4) 48in T12 Linear Fluorescent	DELAMP
SCE	Lighting Indoor Linear Fluorescent Delamping	(2) 48in Reduced 28 Watt (1) Instant Start Ballast T8 Linear Fluorescent Replacing (3) 48in T12 Linear Fluorescent	DELAMP
SCE	Lighting Indoor Linear Fluorescent Delamping	(2) 48in Reduced 28 Watt (1) Instant Start Ballast T8 Linear Fluorescent Replacing (4) 48in T12 Linear Fluorescent	DELAMP
SCE	Lighting Indoor Linear Fluorescent Delamping	(2) 48in Reduced 28 Watt (1) Instant Start Ballast W/ Reflectors T8 Linear Fluorescent Replacing (3) 48in T12 Linear Fluorescent	DELAMP
SCE	Lighting Indoor Linear Fluorescent Delamping	(2) 48in Reduced 28 Watt (1) Instant Start Ballast W/ Reflectors T8 Linear Fluorescent Replacing (4) 48in T12 Linear Fluorescent	DELAMP
SCE	Lighting Outdoor LED Fixture	121 To 150 Watt Exterior Fixture With Motion Control And Photo Sensor LED Replacing 250 Watt High Pressure Sodium	LED_OUTDOORFIXT
SCE	Lighting Outdoor LED Fixture	162 To 194 Watt Exterior Fixture With Motion Control And Photo Sensor LED Replacing 350 Watt Pulse Start Metal Halide	LED_OUTDOORFIXT
SCE	Lighting Outdoor LED Fixture	195 To 226 Watt Exterior Fixture With Motion Control And Photo Sensor LED Replacing 400 Watt Pulse Start Metal Halide	LED_OUTDOORFIXT

PA	Measure Group	Measure Name	ESPI Measure
SCE	Lighting Outdoor LED Fixture	204 To 275 Watt Exterior Fixture With Motion Control And Photo Sensor LED Replacing 400 Watt High Pressure Sodium	LED_OUTDOORFIXT
SCE	Lighting Outdoor LED Fixture	41 To 80 Watt Wall Pack LED Replacing 176 To 250 Watt High Pressure Sodium	LED_OUTDOORFIXT
SCE	Lighting Outdoor LED Fixture	50 To 90 Watt Exterior Fixture With Motion Control And Photo Sensor LED Replacing 150 Watt High Pressure Sodium	LED_OUTDOORFIXT
SCE	Lighting Outdoor LED Fixture	518 To 643 Watt Exterior Fixture With Motion Control And Photo Sensor LED Replacing 1000 Watt Pulse Start Metal Halide	LED_OUTDOORFIXT
SCE	Lighting Outdoor LED Fixture	91 To 120 Watt Exterior Fixture With Motion Control And Photo Sensor LED Replacing 200 Watt High Pressure Sodium	LED_OUTDOORFIXT
SCE	Lighting Outdoor LED Streetlight	131 To 190 Watt Street Light LED Replacing 250 Watt High Pressure Sodium	LED_STREETLIGHT
SCE	Lighting Outdoor LED Streetlight	223 To 260 Watt Street Light LED Replacing 400 Watt High Pressure Sodium	LED_STREETLIGHT
SCE	Lighting Outdoor LED Streetlight	55 To 90 Watt Street Light LED Replacing 150 Watt High Pressure Sodium	LED_STREETLIGHT
SCE	Lighting Outdoor LED Streetlight	91 To 130 Watt Street Light LED Replacing 200 Watt High Pressure Sodium	LED_STREETLIGHT
SDGE	Lighting Indoor Controls Wall Or Ceiling Mounted Occupancy Sensor	Lighting - Occupancy Sensor - Wall Mounted Lighting Sensor	OCCUPANCY
SDGE	Lighting Indoor Controls Wall Or Ceiling Mounted Occupancy Sensor	Lighting - Occupancy Sensor - Wall/Ceiling Mounted Lighting Sensor	OCCUPANCY
SDGE	Lighting Indoor Controls Wall Or Ceiling Mounted Occupancy Sensor	Lighting-Wall Or Ceiling-Mounted Lighting Sensor >= 500 Watts	OCCUPANCY
SDGE	Lighting Indoor LED Fixture	LED Recessed Downlight 12 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Recessed Downlight 13 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Recessed Downlight 14 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Recessed Downlight 15 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Recessed Downlight/Retrofit 10 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Recessed Downlight/Retrofit	LED_DOWNLIGHT

PA	Measure Group	Measure Name	ESPI Measure
		11 Watt	
SDGE	Lighting Indoor LED Fixture	LED Recessed Downlight/Retrofit 15 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Recessed Downlight/Retrofit 9 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 10 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 11 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 12 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 13 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 14 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 18 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 19 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 20 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 22 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 23 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 24 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 7 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	LED Surface, Pendant, Track, ACcent, And Recessed Downlight 8 Watt	LED_DOWNLIGHT
SDGE	Lighting Indoor LED Fixture	Lighting - LED System <=15 Watts Surface/Pendant/Recessed Down Lighting	LED_DOWNLIGHT

PA	Measure Group	Measure Name	ESPI Measure
SDGE	Lighting Indoor LED Lamp	7w Int LED Candelabra Lamp	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED - Candalebra 2 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED - Candalebra 3 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED - Candalebra 3.5 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED - Candalebra 4 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED - Candalebra 5 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Integral A-Lamp 12-17 Watt Interior	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Integral A-Lamp 18-30 Watt Interior	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Integral A-Lamp 8-10 Watt Interior	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Integral A-Lamp Up To 11 Watt Interior	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Integral A-Lamp Up To 7 Watt Interior	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Integral Candelabra Lamp Up To 4 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Integral Globe Lamp 3-10 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 10 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 11 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 12 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 13 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 13.5 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 14 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 15 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 16 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 17 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 18 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 19 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 20 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 5.5 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 6 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 7 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 8 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In A-Lamp 9.5 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In Globe 11 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In Globe 4 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In Globe 5 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In Globe 6 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In Globe 7 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In Globe 7.5 Watt	LED_LAMP
SDGE	Lighting Indoor LED Lamp	LED Screw-In Globe 8 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector	LED - MR16 10 Watt	LED_LAMP

PA	Measure Group	Measure Name	ESPI Measure
	Lamp		
SDGE	Lighting Indoor LED Reflector Lamp	LED - MR16 4 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED - MR16 6 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED - MR16 7 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED - MR16 8 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Integral Par-20 Lamp Up To 10 Watt Interior	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Integral Par-30 Lamp Up To 15 Watt Interior	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Integral Par30 Lamp 16-21watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Integral Par38 Lamp 17-22 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Integral Par38 Lamp Up To 16 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED MR16 7 -10 Watt Interior Lamp	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED MR16 Up To 6 Watt Interior LED Integral Lamp	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par20 5 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par20 7 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par20 8 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par30 10 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par30 11 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par30 12 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par30 13 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par30 14 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par30 15 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par30 18 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par30 8 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector	LED Screw-In Par38 13 Watt	LED_LAMP

PA	Measure Group	Measure Name	ESPI Measure
	Lamp		
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par38 14 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par38 15 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par38 16 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par38 17 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par38 18 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par38 19 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par38 19.5 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In Par38 20 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In R30 11 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In R30 12 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In R40 10 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In R40 12 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In R40 17 Watt	LED_LAMP
SDGE	Lighting Indoor LED Reflector Lamp	LED Screw-In R40 18 Watt	LED_LAMP
SDGE	Lighting Outdoor LED Fixture	Lighting - Exterior LED Fixtures <=110 Watts	LED_OUTDOORFIXT
SDGE	Lighting Outdoor LED Fixture	Lighting - Exterior LED Fixtures <=130 Watts	LED_OUTDOORFIXT
SDGE	Lighting Outdoor LED Fixture	Lighting - Exterior LED Fixtures <=192watts	LED_OUTDOORFIXT
SDGE	Lighting Outdoor LED Fixture	Lighting - Exterior LED Fixtures <=350 Watts	LED_OUTDOORFIXT
SDGE	Lighting Outdoor LED Fixture	Lighting - Exterior LED Fixtures <=80 Watts	LED_OUTDOORFIXT

APPENDIX AA STANDARDIZED HIGH LEVEL SAVINGS

Gross Lifecycle Savings (MWh)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	CFL	1,670	1,670	1.00	100.0%	
PGE	Delamp	44,940	44,940	1.00	100.0%	
PGE	LED	278,686	373,320	1.34	3.3%	1.35
PGE	LED Outdoor	116,393	139,187	1.20	0.0%	1.20
PGE	LED Streetlights	134,269	134,269	1.00	100.0%	
PGE	Lighting Outdoor	3,683	3,683	1.00	100.0%	
PGE	Other Lighting Indoor	186,865	186,865	1.00	100.0%	
PGE	**Total**	**766,505**	**883,933**	**1.15**	**49.7%**	**1.30**
SCE	CFL	421	421	1.00	100.0%	
SCE	Delamp	21,259	21,259	1.00	100.0%	
SCE	LED	500,962	628,562	1.25	4.7%	1.27
SCE	LED Outdoor	10,489	12,543	1.20	0.0%	1.20
SCE	LED Streetlights	2,747	2,747	1.00	100.0%	
SCE	Lighting Outdoor	1,812	1,812	1.00	100.0%	
SCE	Occupancy	6,715	6,715	1.00	100.0%	
SCE	Other Lighting Indoor	298,616	298,616	1.00	100.0%	
SCE	**Total**	**843,022**	**972,676**	**1.15**	**42.1%**	**1.27**
SDGE	CFL	1,542	1,542	1.00	100.0%	
SDGE	LED	154,288	187,552	1.22	4.5%	1.23
SDGE	LED Outdoor	32,047	38,322	1.20	0.0%	1.20
SDGE	Lighting Outdoor	4,839	4,839	1.00	100.0%	
SDGE	Occupancy	1,565	1,565	1.00	100.0%	
SDGE	Other Lighting Indoor	198,218	198,218	1.00	100.0%	
SDGE	**Total**	**392,499**	**432,038**	**1.10**	**54.3%**	**1.22**
MCE	Delamp	593	593	1.00	100.0%	
MCE	LED	148	148	1.00	100.0%	
MCE	**Total**	**742**	**742**	**1.00**	**100.0%**	
	Statewide	***2,002,767***	***2,289,389***	***1.14***	***47.4%***	***1.27***

Net Lifecycle Savings (MWh)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	CFL	1,031	1,031	1.00	100.0%	0.62	0.62		
PGE	Delamp	27,416	28,503	1.04	0.0%	0.61	0.63	0.61	0.63
PGE	LED	180,679	206,504	1.14	3.1%	0.65	0.55	0.65	0.55
PGE	LED Outdoor	71,624	62,954	0.88	0.0%	0.62	0.45	0.62	0.45
PGE	LED Streetlights	80,561	71,051	0.88	0.0%	0.60	0.53	0.60	0.53
PGE	Lighting Outdoor	2,233	2,233	1.00	100.0%	0.61	0.61		
PGE	Other Lighting Indoor	129,294	129,294	1.00	100.0%	0.69	0.69		
PGE	**Total**	**492,838**	**501,570**	**1.02**	**28.0%**	**0.64**	**0.57**	**0.63**	**0.53**
SCE	CFL	243	243	1.00	100.0%	0.58	0.58		
SCE	Delamp	12,755	14,632	1.15	0.0%	0.60	0.69	0.60	0.69
SCE	LED	312,553	395,258	1.26	4.7%	0.62	0.63	0.62	0.63
SCE	LED Outdoor	6,293	5,673	0.90	0.0%	0.60	0.45	0.60	0.45
SCE	LED Streetlights	1,997	1,454	0.73	0.0%	0.73	0.53	0.73	0.53
SCE	Lighting Outdoor	1,110	1,110	1.00	100.0%	0.61	0.61		
SCE	Occupancy	4,547	3,404	0.75	0.0%	0.68	0.51	0.68	0.51
SCE	Other Lighting Indoor	188,635	188,635	1.00	100.0%	0.63	0.63		
SCE	**Total**	**528,133**	**610,408**	**1.16**	**38.7%**	**0.63**	**0.63**	**0.62**	**0.63**
SDGE	CFL	925	925	1.00	100.0%	0.60	0.60		
SDGE	LED	93,991	124,972	1.33	4.4%	0.61	0.67	0.61	0.67
SDGE	LED Outdoor	22,051	17,333	0.79	0.0%	0.69	0.45	0.69	0.45
SDGE	Lighting Outdoor	2,903	2,903	1.00	100.0%	0.60	0.60		
SDGE	Occupancy	1,079	1,084	1.00	0.1%	0.69	0.69	0.69	0.69
SDGE	Other Lighting Indoor	133,335	133,335	1.00	100.0%	0.67	0.67		
SDGE	**Total**	**254,284**	**280,553**	**1.10**	**55.6%**	**0.65**	**0.65**	**0.62**	**0.63**
MCE	Delamp	356	356	1.00	100.0%	0.60	0.60		
MCE	LED	89	89	1.00	100.0%	0.60	0.60		
MCE	**Total**	**445**	**445**	**1.00**	**100.0%**	**0.60**	**0.60**		
	Statewide	***1,275,701***	***1,392,975***	***1.09***	***38.0%***	***0.64***	***0.61***	***0.63***	***0.59***

Gross Lifecycle Savings (MW)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	CFL	0.3	0.3	1.00	100.0%	
PGE	Delamp	10.5	10.5	1.00	100.0%	
PGE	LED	56.7	79.3	1.40	3.3%	1.41
PGE	LED Outdoor	0.0	0.0			
PGE	LED Streetlights	0.0	0.0			
PGE	Lighting Outdoor	0.3	0.3	1.00	100.0%	
PGE	Other Lighting Indoor	38.0	38.0	1.00	100.0%	
PGE	**Total**	**105.9**	**128.5**	**1.21**	**48.2%**	**1.41**
SCE	CFL	0.1	0.1	1.00	100.0%	
SCE	Delamp	5.3	5.3	1.00	100.0%	
SCE	LED	96.1	95.2	0.99	4.9%	0.99
SCE	LED Outdoor	0.0	0.0			
SCE	LED Streetlights	0.0	0.0			
SCE	Lighting Outdoor	0.0	0.0			
SCE	Occupancy	1.4	1.4	1.00	100.0%	
SCE	Other Lighting Indoor	76.9	76.9	1.00	100.0%	
SCE	**Total**	**179.8**	**178.8**	**0.99**	**49.1%**	**0.99**
SDGE	CFL	0.3	0.3	1.00	100.0%	
SDGE	LED	25.7	32.2	1.25	4.3%	1.26
SDGE	LED Outdoor	0.0	0.0			
SDGE	Lighting Outdoor	0.0	0.0	1.00	100.0%	
SDGE	Occupancy	0.4	0.4	1.00	100.0%	
SDGE	Other Lighting Indoor	49.2	49.2	1.00	100.0%	
SDGE	**Total**	**75.6**	**82.0**	**1.08**	**67.4%**	**1.26**
MCE	Delamp	0.2	0.2	1.00	100.0%	
MCE	LED	0.0	0.0	1.00	100.0%	
MCE	**Total**	**0.2**	**0.2**	**1.00**	**100.0%**	
	Statewide	***361.4***	***389.4***	***1.08***	***52.7%***	***1.16***

Net Lifecycle Savings (MW)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	CFL	0.2	0.2	1.00	100.0%	0.61	0.61		
PGE	Delamp	6.4	6.7	1.04	0.0%	0.61	0.63	0.61	0.63
PGE	LED	36.7	43.5	1.18	3.1%	0.65	0.55	0.65	0.55
PGE	LED Outdoor	0.0	0.0						
PGE	LED Streetlights	0.0	0.0						
PGE	Lighting Outdoor	0.2	0.2	1.00	100.0%	0.60	0.60		
PGE	Other Lighting Indoor	25.7	25.7	1.00	100.0%	0.68	0.68		
PGE	**Total**	**69.2**	**76.2**	**1.10**	**39.3%**	**0.65**	**0.59**	**0.64**	**0.56**
SCE	CFL	0.0	0.0	1.00	100.0%	0.58	0.58		
SCE	Delamp	3.2	3.6	1.14	0.0%	0.60	0.68	0.60	0.68
SCE	LED	59.9	60.2	1.01	4.9%	0.62	0.63	0.62	0.63
SCE	LED Outdoor	0.0	0.0						
SCE	LED Streetlights	0.0	0.0						
SCE	Lighting Outdoor	0.0	0.0						
SCE	Occupancy	1.0	0.7	0.74	0.0%	0.68	0.51	0.68	0.51
SCE	Other Lighting Indoor	48.7	48.7	1.00	100.0%	0.63	0.63		
SCE	**Total**	**112.8**	**113.3**	**1.00**	**45.8%**	**0.63**	**0.63**	**0.62**	**0.63**
SDGE	CFL	0.2	0.2	1.00	100.0%	0.60	0.60		
SDGE	LED	15.7	21.7	1.38	4.3%	0.61	0.68	0.61	0.68
SDGE	LED Outdoor	0.0	0.0						
SDGE	Lighting Outdoor	0.0	0.0	1.00	100.0%	0.60	0.60		
SDGE	Occupancy	0.2	0.2	1.00	0.0%	0.69	0.69	0.69	0.69
SDGE	Other Lighting Indoor	33.2	33.2	1.00	100.0%	0.68	0.68		
SDGE	**Total**	**49.3**	**55.4**	**1.12**	**69.1%**	**0.65**	**0.68**	**0.61**	**0.68**
MCE	Delamp	0.1	0.1	1.00	100.0%	0.60	0.60		
MCE	LED	0.0	0.0	1.00	100.0%	0.60	0.60		
MCE	**Total**	**0.1**	**0.1**	**1.00**	**100.0%**	**0.60**	**0.60**		
	Statewide	***231.4***	***245.0***	***1.06***	***48.9%***	***0.64***	***0.63***	***0.63***	***0.61***

Gross Lifecycle Savings (MTherms)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	CFL	-12	-12	1.00	100.0%	
PGE	Delamp	-301	-301	1.00	100.0%	
PGE	LED	-1,699	-2,244	1.32	3.4%	1.33
PGE	LED Outdoor	0	0			
PGE	LED Streetlights	0	0			
PGE	Lighting Outdoor	-23	-23	1.00	100.0%	
PGE	Other Lighting Indoor	-1,148	-1,148	1.00	100.0%	
PGE	**Total**	**-3,182**	**-3,727**	**1.17**	**48.4%**	**1.33**
SCE	CFL	-2	-2	1.00	100.0%	
SCE	Delamp	-78	-78	1.00	100.0%	
SCE	LED	-1,172	-1,490	1.27	5.3%	1.29
SCE	LED Outdoor	0	0			
SCE	LED Streetlights	0	0			
SCE	Lighting Outdoor	0	0			
SCE	Occupancy	-39	-39	1.00	100.0%	
SCE	Other Lighting Indoor	-966	-966	1.00	100.0%	
SCE	**Total**	**-2,257**	**-2,575**	**1.14**	**50.8%**	**1.29**
SDGE	CFL	-4	-4	1.00	100.0%	
SDGE	LED	-406	-502	1.23	3.9%	1.24
SDGE	LED Outdoor	0	0			
SDGE	Lighting Outdoor	-1	-1	1.00	100.0%	
SDGE	Occupancy	-5	-5	1.00	100.0%	
SDGE	Other Lighting Indoor	-581	-581	1.00	100.0%	
SDGE	**Total**	**-998**	**-1,093**	**1.10**	**60.9%**	**1.24**
MCE	Delamp	-5	-5	1.00	100.0%	
MCE	LED	-1	-1	1.00	100.0%	
MCE	**Total**	**-6**	**-6**	**1.00**	**100.0%**	
	Statewide	***-6,443***	***-7,401***	***1.15***	***51.2%***	***1.31***

Net Lifecycle Savings (MTherms)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	CFL	-7	-7	1.00	100.0%	0.63	0.63		
PGE	Delamp	-184	-191	1.04	0.0%	0.61	0.63	0.61	0.63
PGE	LED	-1,107	-1,244	1.12	3.2%	0.65	0.55	0.65	0.55
PGE	LED Outdoor	0	0						
PGE	LED Streetlights	0	0						
PGE	Lighting Outdoor	-14	-14	1.00	100.0%	0.60	0.60		
PGE	Other Lighting Indoor	-812	-812	1.00	100.0%	0.71	0.71		
PGE	**Total**	**-2,123**	**-2,267**	**1.07**	**40.9%**	**0.67**	**0.61**	**0.65**	**0.56**
SCE	CFL	-1	-1	1.00	100.0%	0.59	0.59		
SCE	Delamp	-47	-53	1.15	0.0%	0.60	0.69	0.60	0.69
SCE	LED	-727	-936	1.29	5.3%	0.62	0.63	0.62	0.63
SCE	LED Outdoor	0	0						
SCE	LED Streetlights	0	0						
SCE	Lighting Outdoor	0	0						
SCE	Occupancy	-27	-20	0.72	0.0%	0.69	0.50	0.69	0.50
SCE	Other Lighting Indoor	-609	-609	1.00	100.0%	0.63	0.63		
SCE	**Total**	**-1,411**	**-1,620**	**1.15**	**46.0%**	**0.63**	**0.63**	**0.62**	**0.63**
SDGE	CFL	-2	-2	1.00	100.0%	0.60	0.60		
SDGE	LED	-247	-334	1.35	3.9%	0.61	0.67	0.61	0.67
SDGE	LED Outdoor	0	0						
SDGE	Lighting Outdoor	-1	-1	1.00	100.0%	0.60	0.60		
SDGE	Occupancy	-4	-4	1.00	0.0%	0.68	0.67	0.68	0.67
SDGE	Other Lighting Indoor	-385	-385	1.00	100.0%	0.66	0.66		
SDGE	**Total**	**-638**	**-725**	**1.14**	**62.3%**	**0.64**	**0.66**	**0.61**	**0.67**
MCE	Delamp	-3	-3	1.00	100.0%	0.60	0.60		
MCE	LED	-1	-1	1.00	100.0%	0.60	0.60		
MCE	**Total**	**-3**	**-3**	**1.00**	**100.0%**	**0.60**	**0.60**		
	Statewide	***-4,176***	***-4,616***	***1.11***	***45.9%***	***0.65***	***0.62***	***0.63***	***0.60***

Gross First Year Savings (MWh)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	CFL	650	650	1.00	100.0%	
PGE	Delamp	9,092	9,092	1.00	100.0%	
PGE	LED	41,664	41,131	0.99	4.4%	0.99
PGE	LED Outdoor	9,699	13,807	1.42	0.0%	1.42
PGE	LED Streetlights	11,189	11,189	1.00	100.0%	
PGE	Lighting Outdoor	253	253	1.00	100.0%	
PGE	Other Lighting Indoor	14,018	14,018	1.00	100.0%	
PGE	**Total**	**86,566**	**90,140**	**1.04**	**42.8%**	**1.07**
SCE	CFL	102	102	1.00	100.0%	
SCE	Delamp	2,156	2,156	1.00	100.0%	
SCE	LED	71,606	84,780	1.18	6.9%	1.20
SCE	LED Outdoor	874	1,244	1.42	0.0%	1.42
SCE	LED Streetlights	229	229	1.00	100.0%	
SCE	Lighting Outdoor	121	121	1.00	100.0%	
SCE	Occupancy	839	839	1.00	100.0%	
SCE	Other Lighting Indoor	23,198	23,198	1.00	100.0%	
SCE	**Total**	**99,126**	**112,669**	**1.14**	**31.9%**	**1.20**
SDGE	CFL	478	478	1.00	100.0%	
SDGE	LED	20,300	18,091	0.89	5.0%	0.89
SDGE	LED Outdoor	3,852	5,483	1.42	0.0%	1.42
SDGE	Lighting Outdoor	458	458	1.00	100.0%	
SDGE	Occupancy	196	196	1.00	100.0%	
SDGE	Other Lighting Indoor	15,349	15,349	1.00	100.0%	
SDGE	**Total**	**40,633**	**40,055**	**0.99**	**43.1%**	**0.98**
MCE	Delamp	123	123	1.00	100.0%	
MCE	LED	32	32	1.00	100.0%	
MCE	**Total**	**155**	**155**	**1.00**	**100.0%**	
	Statewide	***226,479***	***243,019***	***1.07***	***38.1%***	***1.12***

Net First Year Savings (MWh)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	CFL	396	396	1.00	100.0%	0.61	0.61		
PGE	Delamp	5,545	5,767	1.04	0.0%	0.61	0.63	0.61	0.63
PGE	LED	27,001	22,842	0.85	4.2%	0.65	0.56	0.65	0.55
PGE	LED Outdoor	5,969	6,245	1.05	0.0%	0.62	0.45	0.62	0.45
PGE	LED Streetlights	6,713	5,921	0.88	0.0%	0.60	0.53	0.60	0.53
PGE	Lighting Outdoor	154	154	1.00	100.0%	0.61	0.61		
PGE	Other Lighting Indoor	9,712	9,712	1.00	100.0%	0.69	0.69		
PGE	**Total**	**55,491**	**51,036**	**0.92**	**20.5%**	**0.64**	**0.57**	**0.63**	**0.54**
SCE	CFL	61	61	1.00	100.0%	0.59	0.59		
SCE	Delamp	1,294	1,484	1.15	0.0%	0.60	0.69	0.60	0.69
SCE	LED	44,576	53,371	1.20	6.9%	0.62	0.63	0.62	0.63
SCE	LED Outdoor	524	563	1.07	0.0%	0.60	0.45	0.60	0.45
SCE	LED Streetlights	166	121	0.73	0.0%	0.73	0.53	0.73	0.53
SCE	Lighting Outdoor	74	74	1.00	100.0%	0.61	0.61		
SCE	Occupancy	568	425	0.75	0.0%	0.68	0.51	0.68	0.51
SCE	Other Lighting Indoor	14,600	14,600	1.00	100.0%	0.63	0.63		
SCE	**Total**	**61,864**	**70,699**	**1.14**	**28.8%**	**0.62**	**0.63**	**0.62**	**0.63**
SDGE	CFL	287	287	1.00	100.0%	0.60	0.60		
SDGE	LED	12,317	12,091	0.98	5.0%	0.61	0.67	0.61	0.67
SDGE	LED Outdoor	2,650	2,480	0.94	0.0%	0.69	0.45	0.69	0.45
SDGE	Lighting Outdoor	275	275	1.00	100.0%	0.60	0.60		
SDGE	Occupancy	135	136	1.00	0.2%	0.69	0.69	0.69	0.69
SDGE	Other Lighting Indoor	10,302	10,302	1.00	100.0%	0.67	0.67		
SDGE	**Total**	**25,965**	**25,571**	**0.98**	**44.2%**	**0.64**	**0.64**	**0.62**	**0.62**
MCE	Delamp	74	74	1.00	100.0%	0.60	0.60		
MCE	LED	19	19	1.00	100.0%	0.60	0.60		
MCE	**Total**	**93**	**93**	**1.00**	**100.0%**	**0.60**	**0.60**		
	Statewide	***143,412***	***147,399***	***1.03***	***28.4%***	***0.63***	***0.61***	***0.63***	***0.59***

Gross First Year Savings (MW)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	CFL	0.1	0.1	1.00	100.0%	
PGE	Delamp	2.1	2.1	1.00	100.0%	
PGE	LED	8.6	8.4	0.98	4.4%	0.98
PGE	LED Outdoor	0.0	0.0			
PGE	LED Streetlights	0.0	0.0			
PGE	Lighting Outdoor	0.0	0.0	1.00	100.0%	
PGE	Other Lighting Indoor	2.9	2.9	1.00	100.0%	
PGE	**Total**	**13.7**	**13.6**	**0.99**	**40.3%**	**0.98**
SCE	CFL	0.0	0.0	1.00	100.0%	
SCE	Delamp	0.5	0.5	1.00	100.0%	
SCE	LED	14.2	12.9	0.91	7.0%	0.90
SCE	LED Outdoor	0.0	0.0			
SCE	LED Streetlights	0.0	0.0			
SCE	Lighting Outdoor	0.0	0.0			
SCE	Occupancy	0.2	0.2	1.00	100.0%	
SCE	Other Lighting Indoor	6.0	6.0	1.00	100.0%	
SCE	**Total**	**21.0**	**19.6**	**0.94**	**36.9%**	**0.90**
SDGE	CFL	0.1	0.1	1.00	100.0%	
SDGE	LED	3.6	3.2	0.90	4.9%	0.89
SDGE	LED Outdoor	0.0	0.0			
SDGE	Lighting Outdoor	0.0	0.0	1.00	100.0%	
SDGE	Occupancy	0.0	0.0	1.00	100.0%	
SDGE	Other Lighting Indoor	3.8	3.8	1.00	100.0%	
SDGE	**Total**	**7.5**	**7.1**	**0.95**	**54.8%**	**0.89**
MCE	Delamp	0.0	0.0	1.00	100.0%	
MCE	LED	0.0	0.0	1.00	100.0%	
MCE	**Total**	**0.0**	**0.0**	**1.00**	**100.0%**	
	Statewide	***42.2***	***40.4***	***0.96***	***41.3%***	***0.93***

Net First Year Savings (MW)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	CFL	0.1	0.1	1.00	100.0%	0.61	0.61		
PGE	Delamp	1.3	1.3	1.04	0.0%	0.61	0.63	0.61	0.63
PGE	LED	5.5	4.6	0.84	4.1%	0.65	0.55	0.65	0.55
PGE	LED Outdoor	0.0	0.0						
PGE	LED Streetlights	0.0	0.0						
PGE	Lighting Outdoor	0.0	0.0	1.00	100.0%	0.60	0.60		
PGE	Other Lighting Indoor	2.0	2.0	1.00	100.0%	0.68	0.68		
PGE	**Total**	**8.9**	**8.0**	**0.90**	**25.6%**	**0.65**	**0.59**	**0.64**	**0.57**
SCE	CFL	0.0	0.0	1.00	100.0%	0.60	0.60		
SCE	Delamp	0.3	0.4	1.14	0.0%	0.60	0.68	0.60	0.68
SCE	LED	8.9	8.2	0.92	7.0%	0.62	0.63	0.62	0.63
SCE	LED Outdoor	0.0	0.0						
SCE	LED Streetlights	0.0	0.0						
SCE	Lighting Outdoor	0.0	0.0						
SCE	Occupancy	0.1	0.1	0.74	0.0%	0.68	0.51	0.68	0.51
SCE	Other Lighting Indoor	3.8	3.8	1.00	100.0%	0.63	0.63		
SCE	**Total**	**13.1**	**12.4**	**0.95**	**33.8%**	**0.62**	**0.63**	**0.62**	**0.63**
SDGE	CFL	0.1	0.1	1.00	100.0%	0.60	0.60		
SDGE	LED	2.2	2.2	1.01	4.8%	0.61	0.68	0.61	0.68
SDGE	LED Outdoor	0.0	0.0						
SDGE	Lighting Outdoor	0.0	0.0	1.00	100.0%	0.60	0.60		
SDGE	Occupancy	0.0	0.0	1.00	0.1%	0.69	0.69	0.69	0.69
SDGE	Other Lighting Indoor	2.6	2.6	1.00	100.0%	0.67	0.67		
SDGE	**Total**	**4.8**	**4.8**	**1.00**	**56.6%**	**0.64**	**0.67**	**0.61**	**0.68**
MCE	Delamp	0.0	0.0	1.00	100.0%	0.60	0.60		
MCE	LED	0.0	0.0	1.00	100.0%	0.60	0.60		
MCE	**Total**	**0.0**	**0.0**	**1.00**	**100.0%**	**0.60**	**0.60**		
	Statewide	***26.8***	***25.3***	***0.94***	***35.2%***	***0.63***	***0.63***	***0.63***	***0.61***

Gross First Year Savings (MTherms)

PA	Standard Report Group	Ex-Ante Gross	Ex-Post Gross	GRR	% Ex-Ante Gross Pass Through	Eval GRR
PGE	CFL	-4	-4	1.00	100.0%	
PGE	Delamp	-61	-61	1.00	100.0%	
PGE	LED	-256	-249	0.98	4.6%	0.97
PGE	LED Outdoor	0	0			
PGE	LED Streetlights	0	0			
PGE	Lighting Outdoor	-2	-2	1.00	100.0%	
PGE	Other Lighting Indoor	-83	-83	1.00	100.0%	
PGE	**Total**	**-406**	**-400**	**0.98**	**40.0%**	**0.97**
SCE	CFL	0	0	1.00	100.0%	
SCE	Delamp	-8	-8	1.00	100.0%	
SCE	LED	-189	-222	1.18	7.5%	1.19
SCE	LED Outdoor	0	0			
SCE	LED Streetlights	0	0			
SCE	Lighting Outdoor	0	0			
SCE	Occupancy	-5	-5	1.00	100.0%	
SCE	Other Lighting Indoor	-76	-76	1.00	100.0%	
SCE	**Total**	**-278**	**-311**	**1.12**	**37.2%**	**1.19**
SDGE	CFL	-1	-1	1.00	100.0%	
SDGE	LED	-61	-55	0.89	4.2%	0.89
SDGE	LED Outdoor	0	0			
SDGE	Lighting Outdoor	0	0	1.00	100.0%	
SDGE	Occupancy	-1	-1	1.00	100.0%	
SDGE	Other Lighting Indoor	-46	-46	1.00	100.0%	
SDGE	**Total**	**-109**	**-102**	**0.94**	**46.2%**	**0.89**
MCE	Delamp	-1	-1	1.00	100.0%	
MCE	LED	0	0	1.00	100.0%	
MCE	**Total**	**-1**	**-1**	**1.00**	**100.0%**	
	Statewide	***-794***	***-815***	***1.03***	***39.9%***	***1.04***

Net First Year Savings (MTherms)

PA	Standard Report Group	Ex-Ante Net	Ex-Post Net	NRR	% Ex-Ante Net Pass Through	Ex-Ante NTG	Ex-Post NTG	Eval Ex-Ante NTG	Eval Ex-Post NTG
PGE	CFL	-3	-3	1.00	100.0%	0.62	0.62		
PGE	Delamp	-38	-39	1.04	0.0%	0.61	0.63	0.61	0.63
PGE	LED	-166	-139	0.83	4.3%	0.65	0.56	0.65	0.55
PGE	LED Outdoor	0	0						
PGE	LED Streetlights	0	0						
PGE	Lighting Outdoor	-1	-1	1.00	100.0%	0.60	0.60		
PGE	Other Lighting Indoor	-59	-59	1.00	100.0%	0.71	0.71		
PGE	**Total**	**-266**	**-240**	**0.90**	**26.1%**	**0.66**	**0.60**	**0.64**	**0.57**
SCE	CFL	0	0	1.00	100.0%	0.60	0.60		
SCE	Delamp	-5	-6	1.15	0.0%	0.60	0.69	0.60	0.69
SCE	LED	-117	-140	1.20	7.5%	0.62	0.63	0.62	0.63
SCE	LED Outdoor	0	0						
SCE	LED Streetlights	0	0						
SCE	Lighting Outdoor	0	0						
SCE	Occupancy	-3	-2	0.72	0.0%	0.69	0.50	0.69	0.50
SCE	Other Lighting Indoor	-48	-48	1.00	100.0%	0.63	0.63		
SCE	**Total**	**-173**	**-196**	**1.13**	**32.8%**	**0.62**	**0.63**	**0.62**	**0.63**
SDGE	CFL	-1	-1	1.00	100.0%	0.60	0.60		
SDGE	LED	-37	-36	0.98	4.2%	0.60	0.67	0.61	0.67
SDGE	LED Outdoor	0	0						
SDGE	Lighting Outdoor	0	0	1.00	100.0%	0.60	0.60		
SDGE	Occupancy	0	0	1.00	0.0%	0.68	0.67	0.68	0.67
SDGE	Other Lighting Indoor	-30	-30	1.00	100.0%	0.66	0.66		
SDGE	**Total**	**-69**	**-68**	**0.99**	**47.5%**	**0.63**	**0.66**	**0.61**	**0.67**
MCE	Delamp	-1	-1	1.00	100.0%	0.60	0.60		
MCE	LED	0	0	1.00	100.0%	0.60	0.60		
MCE	**Total**	**-1**	**-1**	**1.00**	**100.0%**	**0.60**	**0.60**		
	Statewide	***-508***	***-504***	***0.99***	***31.4%***	***0.64***	***0.62***	***0.63***	***0.60***

APPENDIX AB STANDARDIZED PER UNIT SAVINGS

Per Unit (Quantity) Gross Energy Savings (kWh)

PA	Standard Report Group	Pass Through	% ER Ex-Ante	% ER Ex-Post	Average EUL (yr)	Ex-Post Lifecycle	Ex-Post First Year	Ex-Post Annualized
PGE	LED	0	0.0%	0.0%	9.7	764.1	82.4	82.4
PGE	LED Outdoor	0	0.0%	39.0%	12.2	5,691.6	564.6	464.9
PGE	CFL	1	0.0%		3.0	401.7	156.5	156.5
PGE	Delamp	1	100.0%		14.8	2,402.4	486.1	162.1
PGE	LED	1	0.0%		5.1	284.1	56.9	56.9
PGE	LED Outdoor	1						
PGE	LED Streetlights	1	0.0%		12.0	2,915.0	242.9	242.9
PGE	Lighting Outdoor	1	0.0%		13.7	3,832.3	263.2	263.2
PGE	Other Lighting Indoor	1	0.0%		14.7	997.4	74.8	74.8
SCE	LED	0	0.1%	0.1%	8.4	583.5	77.0	77.0
SCE	LED Outdoor	0	0.6%	39.0%	12.2	26,687.1	2,647.2	2,179.8
SCE	CFL	1	0.0%		4.8	373.9	90.6	90.6
SCE	Delamp	1	100.0%		15.0	3,193.5	323.9	213.4
SCE	LED	1	0.0%		5.5	514.7	107.7	107.7
SCE	LED Streetlights	1	0.0%		12.0	5,164.2	430.4	430.4
SCE	Lighting Outdoor	1	0.0%		8.9	6,381.7	425.4	425.4
SCE	Occupancy	1	0.0%		8.0	870.2	108.8	108.8
SCE	Other Lighting Indoor	1	56.4%		14.9	1,402.8	109.0	96.1
SDGE	LED	0	0.0%	0.0%	13.2	684.1	64.7	64.7
SDGE	LED Outdoor	0	0.0%	39.0%	12.2	2,292.8	328.1	187.3
SDGE	CFL	1	0.0%		3.7	475.5	147.5	147.5
SDGE	LED	1	0.0%		7.3	381.4	56.1	56.1
SDGE	Lighting Outdoor	1	0.0%		10.6	3,563.4	337.1	337.1
SDGE	Occupancy	1	0.0%		8.0	894.7	112.0	112.0
SDGE	Other Lighting Indoor	1	14.9%		13.8	885.2	68.5	64.2
MCE	Delamp	1	76.7%		9.1	2,661.0	551.7	295.3
MCE	LED	1	74.9%		9.0	510.0	109.1	59.8

Per Unit (Quantity) Gross Energy Savings (Therms)

PA	Standard Report Group	Pass Through	% ER Ex-Ante	% ER Ex-Post	Average EUL (yr)	Ex-Post Lifecycle	Ex-Post First Year	Ex-Post Annualized
PGE	LED	0	0.0%	0.0%	9.7	-4.6	-0.5	-0.5
PGE	LED Outdoor	0	0.0%	39.0%	12.2	0.0	0.0	0.0
PGE	CFL	1	0.0%		3.0	-2.8	-1.1	-1.1
PGE	Delamp	1	100.0%		14.8	-16.1	-3.3	-1.1
PGE	LED	1	0.0%		5.1	-1.8	-0.4	-0.4
PGE	LED Outdoor	1						
PGE	LED Streetlights	1	0.0%		12.0	0.0	0.0	0.0
PGE	Lighting Outdoor	1	0.0%		13.7	-23.5	-1.6	-1.6
PGE	Other Lighting Indoor	1	0.0%		14.7	-6.1	-0.4	-0.4
SCE	LED	0	0.1%	0.1%	8.4	-1.4	-0.2	-0.2
SCE	LED Outdoor	0	0.6%	39.0%	12.2	0.0	0.0	0.0
SCE	CFL	1	0.0%		4.8	-1.3	-0.4	-0.4
SCE	Delamp	1	100.0%		15.0	-11.7	-1.2	-0.8
SCE	LED	1	0.0%		5.5	-1.4	-0.3	-0.3
SCE	LED Streetlights	1	0.0%		12.0	0.0	0.0	0.0
SCE	Lighting Outdoor	1	0.0%		8.9	0.0	0.0	0.0
SCE	Occupancy	1	0.0%		8.0	-5.1	-0.6	-0.6
SCE	Other Lighting Indoor	1	56.4%		14.9	-4.5	-0.4	-0.3
SDGE	LED	0	0.0%	0.0%	13.2	-1.8	-0.2	-0.2
SDGE	LED Outdoor	0	0.0%	39.0%	12.2	0.0	0.0	0.0
SDGE	CFL	1	0.0%		3.7	-1.2	-0.4	-0.4
SDGE	LED	1	0.0%		7.3	-0.9	-0.1	-0.1
SDGE	Lighting Outdoor	1	0.0%		10.6	-0.9	-0.1	-0.1
SDGE	Occupancy	1	0.0%		8.0	-3.0	-0.4	-0.4
SDGE	Other Lighting Indoor	1	14.9%		13.8	-2.6	-0.2	-0.2
MCE	Delamp	1	76.7%		9.1	-20.7	-3.9	-2.3
MCE	LED	1	74.9%		9.0	-3.4	-0.7	-0.4

Per Unit (Quantity) Net Energy Savings (kWh)

PA	Standard Report Group	Pass Through	% ER Ex-Ante	% ER Ex-Post	Average EUL (yr)	Ex-Post Lifecycle	Ex-Post First Year	Ex-Post Annualized
PGE	Delamp	0	100.0%	100.0%	14.8	1,523.7	308.3	102.8
PGE	LED	0	0.0%	0.0%	9.7	421.6	45.6	45.6
PGE	LED Outdoor	0	0.0%	39.0%	12.2	2,574.3	255.4	210.3
PGE	LED Streetlights	0	0.0%	0.0%	12.0	1,542.5	128.5	128.5
PGE	CFL	1	0.0%		3.0	247.9	95.3	95.3
PGE	LED	1	0.0%		5.1	172.5	34.5	34.5
PGE	LED Outdoor	1						
PGE	Lighting Outdoor	1	0.0%		13.7	2,323.1	159.9	159.9
PGE	Other Lighting Indoor	1	0.0%		14.7	690.1	51.8	51.8
SCE	Delamp	0	100.0%	100.0%	15.0	2,197.9	222.9	146.9
SCE	LED	0	0.1%	0.1%	8.4	367.2	48.5	48.5
SCE	LED Outdoor	0	0.6%	39.0%	12.2	12,070.5	1,197.3	985.9
SCE	LED Streetlights	0	0.0%	0.0%	12.0	2,732.8	227.7	227.7
SCE	Occupancy	0	0.0%	0.0%	8.0	441.1	55.1	55.1
SCE	CFL	1	0.0%		4.8	215.8	53.7	53.7
SCE	LED	1	0.0%		5.5	318.5	66.8	66.8
SCE	Lighting Outdoor	1	0.0%		8.9	3,907.0	260.5	260.5
SCE	Other Lighting Indoor	1	56.4%		14.9	886.1	68.6	60.7
SDGE	LED	0	0.0%	0.0%	13.2	457.5	43.5	43.5
SDGE	LED Outdoor	0	0.0%	39.0%	12.2	1,037.0	148.4	84.7
SDGE	Occupancy	0	0.0%	0.0%	8.0	620.1	77.5	77.5
SDGE	CFL	1	0.0%		3.7	285.3	88.5	88.5
SDGE	LED	1	0.0%		7.3	229.1	33.7	33.7
SDGE	Lighting Outdoor	1	0.0%		10.6	2,138.0	202.2	202.2
SDGE	Occupancy	1	0.0%		2.1	309.5	148.8	148.8
SDGE	Other Lighting Indoor	1	14.9%		13.8	595.5	46.0	43.0
MCE	Delamp	1	76.7%		9.1	1,596.6	331.0	177.2
MCE	LED	1	74.9%		9.0	306.0	65.4	35.9

Per Unit (Quantity) Net Energy Savings (Therms)

PA	Standard Report Group	Pass Through	% ER Ex-Ante	% ER Ex-Post	Average EUL (yr)	Ex-Post Lifecycle	Ex-Post First Year	Ex-Post Annualized
PGE	Delamp	0	100.0%	100.0%	14.8	-10.2	-2.1	-0.7
PGE	LED	0	0.0%	0.0%	9.7	-2.5	-0.3	-0.3
PGE	LED Outdoor	0	0.0%	39.0%	12.2	0.0	0.0	0.0
PGE	LED Streetlights	0	0.0%	0.0%	12.0	0.0	0.0	0.0
PGE	CFL	1	0.0%		3.0	-1.8	-0.7	-0.7
PGE	LED	1	0.0%		5.1	-1.1	-0.2	-0.2
PGE	LED Outdoor	1						
PGE	Lighting Outdoor	1	0.0%		13.7	-14.1	-1.0	-1.0
PGE	Other Lighting Indoor	1	0.0%		14.7	-4.3	-0.3	-0.3
SCE	Delamp	0	100.0%	100.0%	15.0	-8.0	-0.8	-0.5
SCE	LED	0	0.1%	0.1%	8.4	-0.9	-0.1	-0.1
SCE	LED Outdoor	0	0.6%	39.0%	12.2	0.0	0.0	0.0
SCE	LED Streetlights	0	0.0%	0.0%	12.0	0.0	0.0	0.0
SCE	Occupancy	0	0.0%	0.0%	8.0	-2.5	-0.3	-0.3
SCE	CFL	1	0.0%		4.8	-0.8	-0.2	-0.2
SCE	LED	1	0.0%		5.5	-0.8	-0.2	-0.2
SCE	Lighting Outdoor	1	0.0%		8.9	0.0	0.0	0.0
SCE	Other Lighting Indoor	1	56.4%		14.9	-2.9	-0.2	-0.2
SDGE	LED	0	0.0%	0.0%	13.2	-1.2	-0.1	-0.1
SDGE	LED Outdoor	0	0.0%	39.0%	12.2	0.0	0.0	0.0
SDGE	Occupancy	0	0.0%	0.0%	8.0	-2.0	-0.3	-0.3
SDGE	CFL	1	0.0%		3.7	-0.7	-0.2	-0.2
SDGE	LED	1	0.0%		7.3	-0.5	-0.1	-0.1
SDGE	Lighting Outdoor	1	0.0%		10.6	-0.6	-0.1	-0.1
SDGE	Occupancy	1	0.0%		2.1	0.0	0.0	0.0
SDGE	Other Lighting Indoor	1	14.9%		13.8	-1.7	-0.1	-0.1
MCE	Delamp	1	76.7%		9.1	-12.4	-2.3	-1.4
MCE	LED	1	74.9%		9.0	-2.0	-0.4	-0.2

APPENDIX AC RESPONSE TO RECOMMENDATIONS

EM&V Impact Study Recommendations
Study Title: 2015 Nonresidential ESPI Deemed Lighting Impact Evaluation
Study Manager: CPUC

ID		Section	Conclusion	Recommendation	Disposition (Accepted, Rejected, or Other)	Disposition Notes (e.g. Description of specific program change or Reason for rejection or Under further review)
1	PG&E, SCE, SDG&E	4.2	High pressure sodium (HPS) and low pressure sodium (LPS) represented the self-reported baseline equipment for all LED streetlight retrofits.	While the municipal streetlight market is shifting toward LED technologies, the current ex ante assumption which uses HPS as the baseline should continue to be used.		
2a	CPUC	5.2	Overall, ex post operating hours for LED downlight measures were dramatically different than ex ante claims (79% higher).	Future evaluations should consider conducting a large scale logger study, especially for technologies like LED downlights and reflector lamps installed in high usage areas. The annual operation of these technologies can have potentially significant impacts on realized energy and demand savings moving forward. Likewise, the presence of EMS and advanced dimming capabilities, along with the fact that these technologies are generally recessed into the ceiling, suggest that monitoring studies should consider alternative monitoring techniques (like panel metering and other connected devices) to augment traditional photocell logging techniques. The study should be conducted by technology and building type to capture differences across building type within a given technology.		
2b	CPUC	3.4.3	A number of sampled nonresidential facilities were on energy management systems (EMS) and many of the measure installations represented dimmable technologies.			
3	CPUC	5.3.1	The average replaced wattages for screw-in LED A-Lamps continue to decrease relative to prior evaluations, however, this is not necessarily true for reflector lamps and downlighting.	Future evaluations should continue to track and verify (where possible) the replaced/baseline wattage of all LED measure installations to determine, for LED A-Lamps, if the percentage of CFLs in the baseline continues to grow, and for reflector lamps and downlighting, if there are any significant changes in the distribution of baseline technologies moving forward.		