

Final Report

Evaluation of the Stockton Area Comprehensive Local Program - Brighter Business

Prepared for:
InSync

In Partnership with
Energy Solutions

June 18, 2004

The logo for Quantec features the word "quantec" in a dark green, lowercase, sans-serif font. The text is positioned over a light olive-green, trapezoidal shape that tapers to a point on the left side, creating a stylized arrow or wedge effect.

quantec

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Executive Summary

The Stockton Area Comprehensive Local Program (the Program) was designed to provide energy efficiency information and long-term energy and demand savings to hard-to-reach small businesses and non-profits in the hard-to-reach Stockton area. The Program aggressively utilized local relationships and networks to deliver energy efficiency information and long-term energy and demand savings to hard-to-reach small/medium businesses by working in close partnership with the City of Stockton. The Program consisted of two elements: an informational campaign and the Brighter Business direct install lighting program for small commercial customers. This evaluation covers the Brighter Businesses element.

To participate in Brighter Businesses, the typical customer was required to have demand no greater than 100 kW and must not have participated in any other Public Goods Charge-funded program for the same measures. While the Program was allowed to have up to 5% medium-sized customers between 100-500 peak kW, fewer than 1% of participants actually fell into this category. As a testament to the Program's ability to serve the small commercial market, demand savings for the comprehensive lighting services implemented for participants ranged from 0.08 to 16.23 gross peak kW with a mean savings of just 2.06 kW.

The Program began delivering services in January 2003 and enrolled 145 participating business customers by March 31, 2004. Participants receive a detailed analysis of the current lighting system with a complete report detailing retrofit costs, incentive amount, annual utility savings, payback period, and energy savings. The Program offered incentives based on the estimated peak demand savings and paid up to 100% of the costs for tenant-occupied sites and up to 75% of costs for owner-occupied sites.

The goals of this evaluation are to:

- Evaluate the Program tracking database to ensure that the *ex ante* estimates were calculated properly (i.e., formulas are correct and deemed parameters were input appropriately)
- Verify specific parameters in the per-unit kW and kWh savings algorithms that are not considered deemed values
- Verify achievement of unit-based marketing activities
- Verify the quantities and types of equipment installed
- Assess the persistence of energy-efficient equipment
- Based on deemed savings and installed quantities, verify peak kW and kWh impacts

Upon evaluation of the Program tracking database, Quantec made a number of recommendations regarding the use of deemed values. These recommendations were incorporated into the final version of the Program database and created a slight increase in net Program impacts.

Quantec staff conducted 55 site visits, 38% of total sites, to verify that the measures from the Program database were installed and operating as predicted under the *ex ante* assumptions. Sites were selected using a stratified random sampling approach so that all business sectors and measures were properly represented.

Our site visits revealed that the installed measures were consistent with those reported in the Program database. Overall, the majority of the measures were still installed and operating properly, and the energy and demand savings realization rates are high for all the measures aggregated across the business types (98.8%). Table ES.1 presents the verified Program impacts, including adjustments for both free-ridership and the evaluation findings.

Table ES.1: Program Demand and Energy Impacts

	Gross Savings	Adjusted Savings*	Net Savings**
Demand Savings (kW)	298.11	286.19	282.80
Energy Savings (kWh)	1,461,148	1,402,703	1,384,693

* Based on the approved net-to-gross ratio (0.96) from the Program Implementation Plan, which assumes that 4% of participants are free-riders.

** Based on the M&V realization rate of 98.8% (measures that are installed and operating properly).

In exceeding its hard-to-reach goals, Quantec also found that the Stockton Program implemented a successful mix of marketing activities. Marketing activities included the use of professionally designed printed material, five community marketing partners (e.g., merchant associates), vendor canvassing, an energy efficiency website for the City of Stockton hosted within the city’s website, and word of mouth. The Vendor canvassing, in particular, was an extremely effective way of enrolling new participants and targeting specific areas of interest.

Customer satisfaction with the Program is extremely high: 89% of the 55 participants surveyed in the evaluation described themselves as *Extremely Satisfied* with the Program. Customers liked the professional quality of customer service received, which requires little time, inconvenience, or cost for participants. Most participants were also extremely satisfied with the post-installation quantity and quality of light, stating that it was an improvement over their previous lighting.

I. Introduction

Program Description

The Stockton Area Comprehensive Local Program (the Program) was designed to provide energy efficiency information and long-term energy and demand savings to hard-to-reach small- and medium-sized businesses and non-profits in the Stockton area. To participate, the typical customer was required to have demand no greater than 100 kW and must not have participated in any other Public Goods Charge-funded program for the same measures. The Program was allowed to have up to 5% of medium sized customers sized between 100-500 peak kW.

The project has two principal components:

- The Brighter Businesses program, which intends to move energy efficient lighting solutions into the hard-to-reach small business market
- The information only component, which is composed primarily of a direct mail and email campaign

The Brighter Businesses program utilizes local agencies and networks to generate interest with small-/medium-sized businesses that have a tendency to be disinterested in programs involving outside audits. Program participants benefit from a turnkey process supervised by a trusted source and maximized energy savings per site through comprehensive lighting retrofits.

An experienced lighting specialist conducts a site visit and performs a detailed analysis of the current lighting system. Inefficiencies are identified and cost-effective upgrades are suggested, with an emphasis on identifying opportunities beyond the simple installation of compact fluorescent lights (CFLs).¹ The data are entered into a program-tracking database that uses energy audit software to compute potential demand and energy savings. A complete report detailing retrofit costs, incentive amount, annual utility savings, payback period, and energy savings is provided to the business at that time.²

¹ Only 46 of the 145 participants (32%) received CFLs. In addition to lighting, Brighter Businesses aims to identify basic refrigeration and air conditioning efficiency opportunities in participating facilities. No incentives are paid for these upgrades.

² The audit report calculates expected energy savings based on their reported hours of operation. Program reporting, incorporates the use of deemed hours of operation, as well as interactive effects.

The lighting specialist returns to the site to review the plan and obtain customer approval for the project. A vendor is then selected to conduct the installation. Following the installation, Energy Solutions visits the site once again to verify that all measures were installed properly. The incentives are then paid directly to vendors, minimizing the “out of pocket costs” for participants.

InSync was the prime contractor for this Program. Energy Solutions was the subcontractor that implemented the Brighter Businesses component of the Program.

The Brighter Business Program began delivering services in January 2003 and enrolled 145 participating small business customers by March 31, 2004.³

Evaluation Approach

The goals of this evaluation are to:

- Evaluate the Program tracking database to ensure that the *ex ante* estimates were calculated properly (i.e., formulas are correct and deemed parameters were input appropriately)
- Verify specific parameters in the per-unit kW and kWh savings algorithms that are not considered deemed values
- Verify achievement of unit-based marketing activities
- Verify the quantities and types of equipment installed
- Assess the persistence of energy-efficient equipment
- Based on deemed savings and installed quantities, verify peak kW and kWh impacts

In order to fulfill the goals of this study, Quantec conducted a number of research activities, including:

- A technical review of the Program database to verify that the *ex ante* estimates are being calculated properly
- A review of marketing materials and status reports
- On-site measure verification at 55 site visits
- Preparation of net Program impacts based on the findings from the site visits

³ The Program received an extension that allowed it to continue to install measures beyond the original December 31, 2003, deadline.

Each of these activities is discussed in the following chapters. Chapter II examines the savings calculations; Chapter III reviews the marketing activities; Chapter IV presents the findings from our site-visit verifications and savings calculations; while Chapter V presents our conclusions and recommendations.

II. Review of Savings Calculations

Quantec carefully reviewed the Program database to verify that:

- The inputs for *ex ante* estimates (deemed parameters) are correct
- The formulas to calculate project costs and expected savings are being calculated properly

Program Database

The Stockton Brighter Business Program uses a customized Microsoft Access database called the Brighter Businesses Lighting Module. Users enter equipment quantities, locations (e.g., office, hallway, etc.), operating hours, and the recommended lighting fixtures. The database then calculates the cost of the project and the incentive amounts.

The cost of the project. Participating Program contractors have agreed to fixed labor rates, equipment markups, and labor factors that allow the Program to deliver fixed-price bids to the customer. As a result of previous negotiations with the contractors and equipment suppliers, both the cost of the hourly labor rate and the equipment are often well below market cost for the participating small commercial customers. Participants pay the contractor only for the price of the project less the incentive, thereby getting the incentive “up front.” Energy Solutions pays the incentive amount directly to the contractor once the work is complete, which acts as an additional quality control mechanism. Energy Solutions then invoices the utility for the amount of the incentive.

Incentive amounts. The incentives are based on the estimated peak demand savings, up to a maximum of \$1,200 per kW.⁴ The Program pays up to 100% of the costs for tenant-occupied sites, and up to 75% of costs for owner-occupied sites.

Deemed Parameters

In order to keep lighting audit and measurement/verification costs low, the deemed values were implicitly defined as part of the cost-effectiveness calculations for the Program Implementation Plan and were formally approved later during meetings with PG&E.

⁴ The average incentive was \$949. A limited number of sites (12) had incentives over \$1,200 per kW because of changes in the scope of work after the project was approved; Energy Solutions agreed to honor the customer fixed price, and therefore paid the difference in cost.

Operating Hours, Interactive Effects, and Coincident Diversity Factors

Table II.1 shows the deemed values used for each of the market sectors/business types. These values were consistent with those approved for the California Statewide Express Efficiency Program, which targets small- and medium-sized nonresidential customers.⁵

Consistent with the deemed savings approach that the Program is following, the Program included adjustments for Demand Interactive Effects (DIE), Energy Interactive Effects (EIE), and Coincident Diversity Factors (CDFs). The purpose of DIE and EIE is to account for the reduction in cooling loads produced by energy-efficient lighting. These adjustment factors are averages applied to all sites of the same business type uniformly. CDFs are used to estimate the demand savings that are coincident with peak demand. The values for these three multipliers and operating hours are presented in Table II.1.

Table II.1: Deemed Values for Operating Hours, Interactive Effects, and Coincident Diversity Factors

PG&E Market Sector*	Annual Operating Hours	Demand Interactive Effects	Coincident Diversity Factors	Energy Interactive Effects
Assembly Industrial	4,900	1.20	0.80	1.09
Grocery	5,800	1.25	0.81	1.13
Office	4,000	1.25	0.81	1.17
Restaurant	4,600	1.26	0.68	1.15
Retail	4,450	1.19	0.88	1.11
Warehouse	3,550	1.09	0.84	1.06

* Source: Pacific Gas and Electric Company, Express Efficiency Program, November 2000

Quantec verified that these approved values were included in the Stockton Program database. While the deemed values were generally implemented according to the approach described in the Program Implementation Plan, three items of interest were discovered; note that each of these items, however, was corrected in the final database received by Quantec in May 2004.

- While verifying that the appropriate “lookup” tables in the Lighting Module database contained these approved values, Quantec discovered a data entry error. The Lighting Module listed the Demand Interactive Effects value under Retail as 1.16, when it should have been 1.19. Consequently, the earlier (prior to May 2004) demand savings calculations for retail businesses were slightly conservative.

⁵ These values were based on a 1997 study of the Program by Quantum Consulting.

- Interactive effects were not incorporated for eight participants savings. In the beginning of the Program, Energy Solutions was only including interactive effects for those participants with air-conditioning. The values, however, are based on averages, and thus should be included for everyone. The impact of this exclusion was a slight underestimation of savings for Program reporting prior to May 2004.⁶
- The Stockton database identified only five market sectors for incorporating deemed values: office, retail, school, restaurant, and warehouse. A number of businesses, including medical offices and small markets, were therefore misclassified under “office” or “retail.” The final version of the Program database, released in May 2004, expanded the list of commercial business types, thus providing more precision in the savings estimates.

Quantec also discovered two additional items of interest:

- The Express Efficiency Program assigned the same number of hours to exit signs (8,760 hours) and exterior lights (4,100 hours) for all sectors. In addition, exit lights were assigned a coincident diversity factor of 1.0 for all sectors. The Stockton Program, however, retrofitted few exit signs (18) or exterior lighting measures (48), and thus decided to use the deemed values based on business type. Given the small incidence of these measures, this results in a slight underestimation of overall savings.
- The Program Implementation Plan applied the coincident diversity factor for offices (0.81) when reporting the deemed wattage for all measures. As discussed above, however, the final Program database correctly selects the coincident diversity factor based on the actual market sector for the participant.

Fixture Wattages

The Stockton Program database also incorporated deemed values for wattage levels for each measure, including the existing and replacement measures. These levels were initially based on values from the Express Efficiency Program but were supplemented by Energy Solutions engineering calculations.⁷

In order to verify that the deemed wattages were correctly used, Quantec selected a sample of eight measures. These measures represented the most

⁶ Given that the interactive effects are based on state averages, and there is likely a higher incidence of cooling in Stockton vs. much of California, even the use of the deemed values is likely an underestimation of interactive energy and demand savings.

⁷ These engineering calculations were presented in a memo to Quantec dated July 17, 2003. Quantec verified that the calculations are sound and reasonable.

common combination of existing and replacement measure and accounted for 95% of all the measures installed and 89% of the expected demand savings (adjusted for interactive effects and the coincident diversity factor).⁸

Next, Quantec compared the values in the lighting measure “lookup” tables in the Program database against the deemed values and found that the values were consistent across all measures. Finally, Quantec inspected the final database, ensuring that users did not inadvertently override the deemed wattage values.⁹ Once again, all values matched the Energy Solutions engineering calculations memo.

Quantec also verified that one measure that increased load – “Premium T8 and high power ballast factor from 34W T12 and energy-efficient magnetic ballast” – was always associated with delamping, as outlined in the Program Implementation Plan (PIP). We discovered one project that did not claim delamping savings. Though this is likely a data entry error, it cannot be verified without field verification. Even without the savings attributed to delamping, the project had enough additional measures that savings were still achieved.

Cost and Savings Calculations

As discussed earlier, the Stockton Program incorporated both cooling interactive effects and the coincident diversity factor into the savings calculations that are reported in the quarterly reports. The savings are calculated as:

$$\text{Coincident (Peak) kW Savings} = \text{Connected load kW savings} * \text{CDF} * \text{DIE}$$

Where:

- Connected load kW savings = Load of the existing fixture less the load of the new fixture
- CDF = Coincident Diversity Factor
- DIE = Demand Interactive Effects

And:

$$\text{kWh Savings} = \text{Connected load kW savings} * \text{Deemed annual operating hours} * \text{EIE}$$

⁸ Appendix B highlights the measures that were selected for verification.

⁹ Data entry errors are minimized for the wattage fields because the Program database was constructed so that wattages were automatically populated for all measures except incandescents.

Where:

- Deemed annual operating hours = Deemed annual hours based on business sector (with exceptions for exit lights)
- EIE = Energy Interactive Effects

Quantec verified that both of these equations were being properly calculated in the Stockton Program database. In addition, we verified that the final quarterly report (1Q 2004) correctly presented these values from the Program database.

III. Review of Marketing Activities

Based on a review of quarterly reports, interviews with Program implementation staff, and an interview with the Stockton Assistant City Manager, we found that Energy Solutions implemented an aggressive marketing strategy for the Brighter Business Program that ensured that they met or exceeded their Program participation goals. Their marketing strategy contained four primary elements:

- **Development of professional marketing materials.** Energy Solutions developed multiple professional-looking brochures (also available in Spanish) and a Web site to promote the Program. Both the marketing materials and Web site provide comprehensive Program information, including eligibility requirements, typical savings estimates, and detailed descriptions of energy efficiency lighting measures. The use of the city logo, including a picture and quote from the mayor, helped quell any doubt about participants might have had about the authenticity about the Program.
- **Community marketing partners.** Energy Solutions formed close alliances with the Stockton Chamber of Commerce, the Mid-Town Advisory Group, the Mid-Town Action Group, the Small Business Development Center, and the Downtown Stockton Alliance to get them to promote the Program to the small business community. The representatives from the Downtown Stockton Alliance even handed out brochures and materials to small businesses. Consequently, customers were more likely to participate in the Program and audits when they knew that it was supported by these positive, trustworthy sources.
- **Vendor canvassing.** Energy Solutions also allowed some of the lighting vendors to go door to door among small businesses to solicit Program participation. The vendor who obtained customer approval was then selected as the implementer for that project. This strategy worked well and was the most commonly used marketing strategy during the latter portion of the Program. It also minimized Program marketing costs. Vendors used the marketing materials to increase Program awareness and participation.
- **Word of mouth.** The Program encouraged word of mouth, asking satisfied participants to tell other small business owners about the Program. In fact, 15 of the 55 contacts (27%) reported that they had informed another business about the Program. The assistant city manager also credits the increased word of mouth regarding the Program for reducing doubts about the legitimacy of the Program, stating that he received few calls from concerned businesses once the Program had been in place for a few months.

The multifaceted marketing strategy was successful, allowing the Stockton Program implementation team to exceed their participation and expected savings goals, achieving over 111% participation and 119% of the estimated gross kW savings (Table III.1).

Table III.1: Achievement of Program Participation and Savings Goals

	Program Goal	Actual Installations	Percent of Goal
Number of Participants	130	145	112%
Estimated Gross kW Savings	250	298.1	119%

As shown in Table III.2, the Stockton marketing activities were also successful in reaching the hard-to-reach small business customer, as the Program exceeded each of its established goals for geographic location, business size, and leased space. Though not officially a Program goal, the Program agreed to track non-English speaking participants and established a target of reaching 20% non-English speaking participants. The Program did not achieve this target, though having it established did encourage Program staff to “go the extra mile” when the barrier presented itself.

Table III.2: Achievement of Hard to Reach Program Goals

Hard-to-Reach Population	Program Goal	Actual Program Participants
Geographic Location (Stockton)	100%	100%
Business Size (very small, less than 100kW)*	95%	99%
Leased Space	65%	86%
Non-English Speaking	20%	8%

* By Program design, the Program was allowed up to 5% of its participants to be medium size with peak kW between 100 and 500 kW. Actual participants that fell into the medium sized category were under 150 kW.

IV. Installation Verification and Savings Analysis

Quantec conducted 55 site visits to verify that the measures from the Brighter Business Program database were installed and operating as predicted under the *ex ante* assumptions. We then calculated the verified energy and demand savings based on the results of our site visits.

Installation Verification

Sample Size

The California Public Utilities Commission requested evaluation estimates with a 90% confidence level and 10% precision (90/10), requiring a sample size of 45 site visits.¹⁰ To allow for data cleaning and attrition, we conducted 55 site visits.

Sample Selection and Stratification

Quantec utilized a sample selection approach that combined stratified random sampling with targeted site visits to the participant sites with the largest expected savings. By implementing this hybrid sample strategy, Quantec was able to maximize the percentage of expected Program savings included in the sample, while at the same time ensuring that the sample accurately reflected the diversity of the Program's participants.

Prior to drawing its sample, Quantec received a list of 14 participants that had been previously visited as part of PG&E's quality control procedure. In an effort to work collaboratively with the utility, verify the installation of measures at as many different locations as possible, and minimize the number of times a participant is disturbed, Quantec removed the 14 participants from its potential sample.

Once participants previously inspected by PG&E had been removed, Quantec ranked the remaining participants by the magnitude of their estimated annual kiloWatt savings. The five sites with the largest expected savings were automatically selected for on-site measure verification. The five sites with the next greatest demand savings were classified similarly and designated as backup locations in the event that a first five could not be verified. As evident in Table IV.1, while the ten sites designated as "Top kW Savers" constituted only 7% of the overall population, they comprised 27% of the Program's

¹⁰ With a very large population, 68 sites would be required to attain these levels of confidence and precision. However, with small population sizes, applying a *population correction factor* achieves 90% confidence/10% precision with a smaller sample size.

overall expected savings. By targeting these locations, Quantec was able to effectively capture a large portion of the Program’s savings in an economical manner, thereby improving the significance of the site visits’ findings.

Table IV.1: KiloWatt Savings by Sample Strata

Strata	No. Sites	Percent of Total Sites	Expected kW Savings	Percent of Total Expected kW Savings
Top kW Savers	10	7%	79.7	27%
Remaining Sites	135	93%	218.4	73%
Total	145	100%	298.1	100%

After targeting the Program’s largest kW savers, Quantec focused on stratifying the remaining sample to ensure that it reflected the proportion of business types that participated in the Program. Table IV.2 compares the population and the sample visited by Quantec with regard to market sector. As evident in the table, the number of locations in each market sector included in the sample is similar to the proportion found in the population. The 55 sampled sites represented 37.9% of the total number of participant sites.

In addition, the selected sites also represented a similar proportion of gross expected annual demand savings by sector (Table IV.3). The 55 sampled sites represented 102.5 kW (34.4%) of the Program total expected annual kW savings.¹¹

Table IV.2: Comparison of Sample and Population by Market Sector

Market Sector	Population		Sample		Percent of Population Sampled
	No. Sites	Percent of Population	No. Sites	Percent of Sample	
Retail	86	59.3%	32	58.2%	37.2%
Office	27	18.6%	11	20.0%	40.7%
Restaurant	18	12.4%	8	14.5%	44.4%
Other ¹²	14	9.7%	4	7.3%	28.6%
Total	145	100%	55	100%	37.9%

¹¹ As discussed above, PG&E visited another 14 sites, inspecting an additional 6.6% and 6.4% of total expected annual kW and kWh savings, respectively.

¹² Since the sample sizes for grocery, warehouse and assembly industrial were small, these categories were aggregated and labeled as “Other”

Table IV.3: Comparison of Sample and Population by kW Savings and Market Sector

Strata	Population		Sample		Percent of Population Sampled
	Gross Expected Annual kW Savings	Percent of Population	Gross Expected Annual kW Savings	Percent of Sample	
Retail	176.6	59.2%	63.8	62.2%	36.1%
Office	50.4	16.9%	18.9	18.4%	37.5%
Restaurant	25.0	8.4%	9.7	9.4%	38.7%
Other	46.1	15.5%	10.1	9.9%	22.0%
Total	298.1	100%	102.5	100.0%	34.4%

When selecting to stratify by market sector, the assumption was made that similar business types were likely to have similar measures and quantities installed as part of their participation in the Program. Therefore, it was believed that stratifying by market sector would simultaneously stratify (and adequately represent) the different measure types. As illustrated in Table IV.4, this assumption proved valid: as the distribution of measure types in the sample is nearly identical to the population. In addition, the sample represented 5,525 measures, or 34.3% of the total measures installed by the Program.

Table IV.4: Comparison of Sample and Population by Measure Type

Measure Type	Population		Sample		Percent of Population Sampled
	Quantity	Percent of Population	Quantity	Percent of Sample	
Compact Fluorescent Light	12,311	76.4%	4,067	73.6%	33.0%
Delamping	3,336	20.7%	1,302	23.6%	39.0%
Other	410	2.5%	135	2.4%	32.9%
T8 Fluorescent Lighting	55	0.3%	21	0.4%	38.2%
Total	16,112	100%	5,525	100.0%	34.3%

Scheduling Appointments

Quantec conducted all of the site visits between April 26 and April 30, 2004. Because Quantec was only inspecting lighting measures and general hours of operation were known for most facilities, it was unnecessary to schedule site visits in advance, and we were able to gain customer approval and cooperation in-person at the time of the site visit. The fact that many of the sites were geographically clustered also allowed us to cost effectively visit various commercial districts within the city of Stockton.

Site Visit Protocol

Quantec prepared a site visit worksheet and interview instrument (Appendix A). During the visit, Quantec examined a number of items, including:

- Are the lighting measures properly installed and functioning?
- For measures no longer in place, when were they removed? What were the primary reasons?
- Do the installed lighting measures match the Program database (e.g., is the installed wattage consistent with that recorded in the database)?
- Has the participant taken any additional efficiency steps since participating in the Program? Were those actions prompted by their participation in the Program?
- Did the participant recommend the Program or the independent installation of energy-efficient lighting to other businesses?
- Is the customer satisfied with the Program? Does the customer have any recommendations for improvement?

Energy and Demand Savings Analysis

Method

The estimation of net energy and demand impacts was based on the findings from our site visits, where we verified the presence of measures and estimated an installation realization rate based on the verified equipment.¹³ The individual installation realization rates were then averaged over similar measures for similar business types within the site visit sample. The determined realization rates were then extrapolated to the population of participating sites to achieve net energy and demand savings impacts. This subsection discusses each step in more detail and presents the analysis results.

Measure Categorization

The Program had a total of 145 participants who had 16,112 measures installed at their place of business. The Program database identified a list of the 19 unique measures (a measure defining the combination of the existing and retrofitted measure) that were installed as part of the Program.¹⁴

¹³ The installation realization rate indicates what share of the expected installed measures was observed during the site visits. The rate could be less than one if measures were not actually installed or had been removed. The rate could be greater than one if the site visit count indicates that more of the same measures were observed than expected.

¹⁴ Appendix B provides a complete list of the incorporated measures.

However, because many of the measures share similar characteristics, including estimated effective useful life, the measures were grouped into the following categories:¹⁵

- T8 Fluorescent Lighting
- Delamping
- Compact Fluorescent Lighting
- Other¹⁶

Installation Realization Rate Calculation

At each site, the quantity and wattage of new fixtures were verified against the Stockton database values. Customers were also asked to verify the previous equipment that was replaced by the new installations. The installation realization rate for each measure was calculated based on the verified data.

Our estimate of the installation realization rate was affected by customers' responses to failed fixtures. If we observed failed lights or fixtures and a customer said they intended to replace them with similar equipment, no penalty was noted. On the other hand, if the customer indicated that they had no intention of looking for an energy-efficient replacement (or could not answer the question) the installation realization rate was decreased.

If, for example, the Program documentation at a site indicated that ten incandescent bulbs were replaced with CFLs and ten CFL fixtures of the expected wattage were observed and operating, this measure received an installation realization rate of 100%. However, if we observed that the customer had reinstalled one of the original lights or fixtures, the installation realization rate would be 90%.

Installation Realization Rate Estimates

The results for each measure at all 55 sites were grouped together into a matrix of average realization rates per measure and business type. The results are shown in Table IV.5.

¹⁵ Table IV.4 provides the frequencies by measure category.

¹⁶ Includes exit signs, occupancy sensors and HID lighting

Table IV.5: Installation Realization Rate by Measure and Business Type

	T8 Fluorescent Lighting	Delamping	CFLs	Other	Total
Retail	98.6%	100.0%	92.5%	100.0%	98.8%
Office	99.1%	100.0%	91.7%	100.0%	99.3%
Restaurant	99.4%	100.0%	87.5%	100.0%	98.2%
Other	98.1%	100.0%	N/A	N/A	98.6%
Overall	98.7%	100.0%	90.4%	100.0%	98.8%

The realization rates from the previous table can then be applied to the gross expected savings generated by each respective sector/measure group to determine the net Program energy and demand impact. However, before the realization rates found during the site visit are applied, the gross expected savings are adjusted to account for free-ridership amongst the Program’s participants. Participants are considered “free-riders” if they were likely to have independently installed the energy-efficient lighting upgrades without the assistance provided by the Program. Rather than utilizing Program resources to collect information and calculate the specific free-ridership level in the Brighter Business Program, the Program opted to apply a 0.96 adjustment factor utilized in other programs.¹⁷ Once the gross expected savings are adjusted, the realization rates from Table IV.5 are applied to determine the Program’s net impact.

Tables IV.6 and IV.7 provide the gross, adjusted gross, and net demand impacts expected by the Program for each measure group and business type, respectively. As indicated in the tables, the Program’s net demand impact is 282.80 kW. Tables IV.8 and IV.9 provide the energy impacts from the Program.

Table IV.6: Program Demand Impacts by Measure Type

	Gross kW Savings	Adjusted kW Savings*	Net kW Savings
T8 Fluorescent Lighting	99.56	95.57	94.21
Delamping	172.96	166.04	166.04
Compact Fluorescent Light	22.02	21.13	19.11
Other	3.58	3.44	3.44
Total	298.11	286.19	282.80

* Based on the approved net-to-gross ratio (0.96) from the Program Implementation Plan, which assumes that 4% of participants are free-riders.

¹⁷ PG&E’s Express Efficiency Program targets small and medium sized customers up to 500 kW throughout PG&E’s service territory and uses a Net to Gross Ratio (NGR) of 0.96 (i.e., 4% free-ridership). The Stockton Brighter Business program has smaller customers on average and is in a geographically hard to reach location, so actual free-ridership may even be lower (i.e., the use of an NGR of .96 should be conservative.)

Table IV.7: Program Demand Impacts by Business Type

	Gross kW Savings	Adjusted kW Savings*	Net kW Savings
Retail	176.62	169.56	168.03
Office	50.37	48.36	48.15
Restaurant	25.01	24.00	22.81
Other	46.11	44.27	43.80
Total	298.11	286.19	282.80

* Based on the approved net-to-gross ratio (0.96) from the Program Implementation Plan, which assumes that 4% of participants are free-riders.

Table IV.8: Program Energy Impacts by Measure Type

	Gross kWh Savings	Adjusted kWh Savings*	Net kWh Savings
T8 Fluorescent Lighting	492,355	472,661	465,884
Delamping	830,334	797,121	797,121
Compact Fluorescent Light	118,278	113,547	102,315
Other	20,181	19,374	19,374
Total	1,461,148	1,402,703	1,384,693

* Based on the approved net-to-gross ratio (0.96) from the Program Implementation Plan, which assumes that 4% of participants are free-riders.

Table IV.9: Program Energy Impacts by Business Type

	Gross kWh Savings	Adjusted kWh Savings*	Net kWh Savings
Retail	833,109	799,785	792,550
Office	232,830	223,517	222,575
Restaurant	154,383	148,208	140,846
Other	240,826	231,193	228,722
Total	1,461,148	1,402,703	1,384,693

* Based on the approved net-to-gross ratio (0.96) from the Program Implementation Plan, which assumes that 4% of participants are free-riders.

Additional Findings

Customer Satisfaction

At each of the verified locations, the primary contact most familiar with the Program was asked to rate his overall satisfaction with the Program on a scale of 1-5, with 1 representing *Extremely Dissatisfied* and 5 representing *Extremely Satisfied*. Participants were overwhelmingly satisfied with the

Program: 49 (89%) of the 55 participants described themselves as *Extremely Satisfied* (Figure IV.1). No participants were somewhat (1) or extremely dissatisfied (2) with the Program. Participants reported:

“We’re very happy with the Program. They worked quickly and did not disrupt business”

“The new lights have less humming, are brighter, and are still less money”

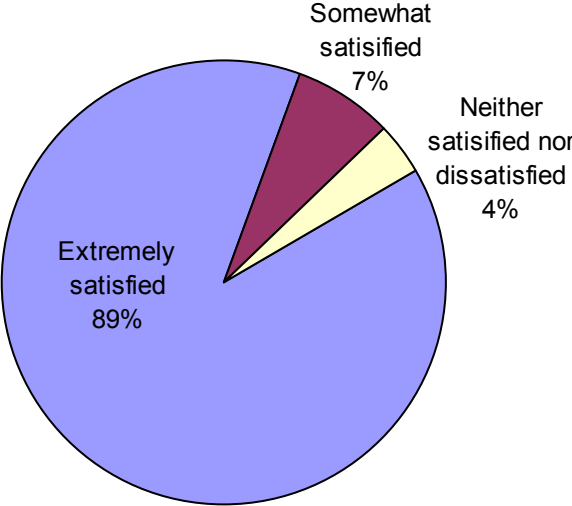
“The business is much brighter, and I can actually see what I am doing!”

“We have no more humming, the old lights used to hum really badly”

“The contractor was great, cleaned everything up and was really fast”

The two participants who scored a 3 on the satisfaction scale reported that the lighting in their business was not as bright as it had been prior to their participation. Contrary to these two participants, one of the most common comments regarding the Program was its dramatic effect on light levels, quality, and distribution. Numerous other participants commented on the speed of the installation process and their appreciation of the Program’s efforts to schedule the unobtrusive installation times.

Figure IV.1: Participant Satisfaction



Spillover

During the site visit, Quantec also asked a series of questions to assess Program spillover. First, contacts at each participating location were asked if they had told any other businesses about the Program and, if so, had that business taken any action to improve its energy efficiency. While 15 of the 55 contacts (27%) responded that they had informed another business about the Program, none of the informed businesses, according to the contacts, had taken any steps to independently improve their lighting efficiency. However, five of the contacts did mention that the business' they told had decided to participate in the Program. While Quantec's inquiries did not find that the Program's efficiency efforts spilled over to non-participant businesses, we did learn that participant's high satisfaction levels translate in an effective word-of-mouth marketing tool.¹⁸

Quantec also asked participants whether or not they had made any non-Program energy efficiency improvements at their business since participating. If so, participants were asked to specify the action taken and comment on whether their experience with the Program this influenced. Seven participants (13%) claimed to have taken additional action since their participation. While only one of seven participants directly attributed their action (the removal of low-efficiency spot lights and installation of T8 fluorescent lighting similar to that installed as part of the Program), several others noted that their participation had led to increased awareness of energy use and efficiency. Other energy-efficient actions taken but not influenced by the Program included the installation of programmable thermostats and the purchase of high efficiency refrigerators, HVAC systems, and water heaters.

Participant spillover, therefore, is minimal, but does occur. The savings estimates in this report do not include any adjustments based on spillover and, therefore, may be slightly conservative.

¹⁸ Interviews with non-participants would be necessary to truly assess baseline practices and non-participant spillover; this task, however, was considered outside the scope of this project.

V. Conclusions and Recommendations

In order to evaluate the Stockton Brighter Business Program, Quantec conducted a technical review of the Program database; reviewed the marketing materials; verified that measures were installed and operational through site visits at randomly selected locations; calculated installation, energy, and demand savings realization rates; and calculated verified energy and demand savings.

We found from our review that the Program is calculating the *ex ante* estimates, including deemed parameters and formulas, according to Program planning requirements. The database used by the Program is a comprehensive and useful tracking and analysis tool. Based on discussions following our review of the Program database, Energy Solutions has already incorporated a number of our recommendations, including:

- The demand interactive effects for retail operations was raised from 1.16 to 1.19 so that it was consistent with the approved value from the Express Efficiency Program.
- The list of market sectors was expanded to include additional business types, such as grocery stores and assembly industrial, consistent with the categories in the Express Efficiency Program.
- Interactive effects were included for all participants, not just those with air-conditioning loads.

For future programs, Quantec recommends that exit signs and exterior lights receive the same standard operating hour assumption and coincident diversity factor – for all market sectors – as they do in the Express Efficiency Program.

We also found that the Stockton Program is implementing a successful mix of marketing activities to exceed its target population of small, hard-to-reach nonresidential customers. The Vendor canvassing, in particular, is an extremely effective way of enrolling new participants and targeting specific areas of interest.

Our site visits revealed that the installed measures were consistent with those reported in the Program database. Overall, the majority of the measures were installed and operating properly, and the energy and demand savings realization rates are quite high for all the measures aggregated across the business types (98.8%).

Customer satisfaction with the Program is extremely high due to the professional quality of customer service received, which requires little time,

inconvenience, or cost for participants. Most participants were also extremely satisfied with the post-installation quantity and quality of light, stating that it was an improvement over their previous lighting. This is an important non-energy benefit that should be used for future marketing efforts of small commercial lighting programs.

Appendix A. Site Visit Summary Worksheet

A comprehensive list of sites visited is included as an Excel spreadsheet named “Appendix A.”

**Evaluation of the Stockton Are
Local Program - Brighter Busin
Appendix A**

Quantec, LLC

6/18/2004

Measure Code Key

DeemedName	Deemed Name 2	Measure Code
Standard CFL: 14-26 watts / incandescent base case	CFL	1
Standard CFL: 5-13 watts / incandescent base case	CFL	2
Premium T8 & ballast: 2-foot lamp / T12 & EE magnetic ballast base case	T8 Fluorescent Lighting	3
Premium T8 & ballast: 4-foot lamp / 34 WT12 & EE magnetic ballast base case	T8 Fluorescent Lighting	4
Premium T8 & ballast: 4-foot lamp / 40w T12 & EE magnetic ballast base	T8 Fluorescent Lighting	5
Premium T8 & ballast: 8-foot lamp / T12 & EE magnetic ballast base case	T8 Fluorescent Lighting	6
Premium T8 & high power ballast: 4-foot lamp / 34 WT12 & EE magnetic ballast base	T8 Fluorescent Lighting	7
Premium T8 & high power ballast: 4-foot lamp / 40w T12 & EE magnetic ballast base	T8 Fluorescent Lighting	8
Premium T8 & low power ballast: 4-foot lamp / 34 WT12 & EE magnetic ballast base	T8 Fluorescent Lighting	9
Premium T8 & low power ballast: 4-foot lamp / 40w T12 & EE magnetic ballast base	T8 Fluorescent Lighting	10
Delamping: 4-foot, T-12 lamp removal	Delamping	11
Delamping: 8-foot, T-12 lamp removal	Delamping	12
New Exit Sign / incandescent Base case	Other	13
Wall- or ceiling-mounted occupancy sensor/ manual base case	Other	14

<u>Sample ID</u>	<u>Measure Code</u>	<u>Measure Qty</u>	<u>Located & Working</u>	<u>Delta</u>	<u>Removed, when?</u>	<u>Removed, why?</u>	<u>If removed, replaced by what?</u>	<u>Told Others?</u>	<u>Did They Install?</u>	<u>Did You Install Other Measures?</u>	<u>Measure Details</u>	<u>Satisfaction</u>
1	13	2	2	0								
1	5	44	44	0				No		No		5
2	13	2	2	0								
2	13	2	2	0								
2	7	12	12	0								
2	12	6	6	0				No		Yes	New	5
3	13	12	12	0								
3	13	12	12	0								
3	13	8	8	0								
3	3	32	32	0								

<u>Sample ID</u>	<u>Measure Code</u>	<u>Measure Qty</u>	<u>Located & Working</u>	<u>Delta</u>	<u>Removed when?</u>	<u>Removed why?</u>	<u>If removed, replaced by what?</u>	<u>Told Others?</u>	<u>Did They Install?</u>	<u>Did You Install Other Measures?</u>	<u>Measure Details</u>	<u>Satisfaction</u>
3	13	1	1	0								
3	11	16	16	0				No		No		5
4	7	106	106	0								
4	11	53	53	0				No		No		5
5	7	12	12	0								
5	4	4	4	0								
5	4	16	16	0								
5	3	1	1	0								
5	12	6	6	0								
5	11	4	4	0				No		No		5
6	13	14	14	0								
6	13	104	102	2	Unknown	Burned Out	Still there - no					
6	7	92	90	2	Unknown	Burned Out	Still there - no					
6	4	2	2	0								
6	12	2	2	0								
6	11	92	92	0				No		No		5
7	13	6	6	0								
7	13	4	4	0								
7	12	2	2	0				No		No		5
8	13	2	2	0								
8	13	28	28	0								
8	7	8	8	0								
8	7	26	26	0								
8	11	62	62	0				Yes	Related	No		5
9	7	24	24	0								
9	7	56	52	4	Could not be							
9	4	2	2	0								
9	4	4	4	0								
9	4	4	4	0								
9	11	2	2	0				No		No		5
9	11	4	4	0								
9	11	80	80	0								
10	13	1	0	1	March	Burned Out	Still there - no					
10	5	4	4	0								
10	5	6	6	0								
10	4	4	3	1	Unknown	Burned Out	Still there - no					
10	11	3	3	0				No		No		5
11	7	58	54	4	Unknown	Burned Out	Still there - no					
11	5	2	2	0								
11	5	2	2	0								
11	5	10	9	1	Unknown	Burned Out	Still there - no					

<u>Sample ID</u>	<u>Measure Code</u>	<u>Measure Qty</u>	<u>Located & Working</u>	<u>Delta</u>	<u>Removed, when?</u>	<u>Removed, why?</u>	<u>If removed, replaced by what?</u>	<u>Told Others?</u>	<u>Did They Install?</u>	<u>Did You Install Other Measures?</u>	<u>Measure Details</u>	<u>Satisfaction</u>
11	4	16	16	0								
11	12	5	5	0								
11	11	58	58	0				No		No		5
12	7	28	28	0								
12	7	8	8	0								
12	12	4	4	0								
12	11	14	14	0				Yes	Told another	No		5
13	13	2	2	0								
13	3	14	13	1	March	Burned Out						
13	11	7	7	0				No		No		5
14	7	36	36	0								
14	11	26	26	0				Yes	Did not install	No		5
15	13	82	82	0								
15	11	41	41	0				Yes	Other	No		5
16	13	28	28	0								
16	13	120	117	3	Unknown	Burned Out	Still there - no					
16	13	120	120	0								
16	13	24	24	0								
16	5	4	4	0								
16	5	2	2	0								
16	5	42	41	1	Unknown	Burned Out	Still there - no					
16	4	92	90	2	Unknown	Burned Out	Still there - no					
16	4	8	8	0								
16	3	2	2	0								
16	13	2	2	0								
16	13	2	2	0								
16	12	8	8	0								
16	11	8	8	0				No		No		5
17	13	8	8	0								
17	13	8	8	0								
17	4	14	14	0								
17	11	14	14	0				No		No		4
18	5	50	50	0				No		No		5
19	13	112	111	1	Late March	Burned Out	Still there - no					
19	7	6	6	0								
19	11	6	6	0				Yes	Friends store	No		5
20	13	2	3	-1								
20	13	32	32	0								
20	11	32	32	0				Yes	No, they told	No		5
21	13	2	2	0								
21	7	6	6	0								
21	7	18	18	0								

<u>Sample ID</u>	<u>Measure Code</u>	<u>Measure Qty</u>	<u>Located & Working</u>	<u>Delta</u>	<u>Removed, when?</u>	<u>Removed, why?</u>	<u>If removed, replaced by what?</u>	<u>Told Others?</u>	<u>Did They Install?</u>	<u>Did You Install Other Measures?</u>	<u>Measure Details</u>	<u>Satisfaction</u>
21	12	12	12	0				Yes	MC Liquors,	No		5
22	13	20	20	0								
22	4	30	30	0								
22	3	2	2	0								
22	11	1	1	0				No		No		5
23	13	5	3	2	Not installed							
23	13	4	4	0								
23	7	8	8	0								
23	11	8	8	0				No		Yes	Had	5
24	13	3	3	0								
24	13	6	4	2	Unknown	Burned Out	Still there - no					
24	5	52	52	0								
24	5	24	24	0								
24	4	2	2	0				No		No		5
25	13	6	6	0								
25	13	128	128	0								
25	13	6	6	0								
25	3	4	4	0								
25	13	3	3	0				No		No		5
26	7	18	18	0								
26	11	18	18	0				No		No		5
27	13	24	24	0				No		No		5
28	13	14	13	1	Almost right	Burned Out	Still there - no					
28	7	12	12	0								
28	7	2	0	2	Could not be							
28	4	3	0	3	Could not be							
28	12	6	6	0								
28	11	5	5	0				Yes	Told a	No		5
29	13	2	2	0								
29	13	6	6	0								
29	5	22	22	0								
29	5	4	4	0								
29	11	6	6	0				No	NA	No		5
30	13	16	16	0				No		No		5
30	13	124	124	0								
31	13	8	8	0								
31	5	4	2	2	Unknown	Removed	Still there - no	No		No		5
31	5	44	43	1	Unknown	Burned Out	Still there - no					
31	5	2	2	0								
32	14	1	1	0								
32	13	6	6	0								
32	13	4	4	0								

<u>Sample ID</u>	<u>Measure Code</u>	<u>Measure Qty</u>	<u>Located & Working</u>	<u>Delta</u>	<u>Removed. when?</u>	<u>Removed. why?</u>	<u>If removed, replaced by what?</u>	<u>Told Others?</u>	<u>Did They Install?</u>	<u>Did You Install Other Measures?</u>	<u>Measure Details</u>	<u>Satisfaction</u>
32	13	112	108	4	Unknown	Burned Out	Nothing					
32	13	68	68	0								
32	7	10	7	3	Unknown	Burned Out	Still there - no					
32	7	28	28	0								
32	7	52	52	0								
32	5	104	102	2	Unknown	Burned Out	Still there - no					
32	11	76	76	0				Yes	Recommend	No		5
33	13	6	6	0				Yes	Told	No		5
33	13	40	40	0								
33	13	120	117	3	Unknown	Burned Out	Still there - no					
33	13	36	36	0								
33	7	56	53	3	Unknown	Burned Out	Still there - no					
33	11	48	48	0								
34	13	33	30	3	Unknown	Burned Out	Incandescent/R					
34	13	6	6	0								
34	7	104	104	0								
34	13	3	3	0								
34	11	104	104	0				No		No		5
35	13	52	52	0								
35	7	16	16	0								
35	11	16	16	0				No		No		5
36	13	4	4	0								
36	13	8	7	1	Unknown	Burned Out	Incandescent					
36	7	12	12	0								
36	6	4	4	0				No	NA	Yes	Installed a	5
36	6	16	16	0								
37	13	3	3	0								
37	7	24	24	0								
37	4	32	32	0								
37	4	2	2	0								
37	11	24	24	0				No		No		3
38	13	18	17	1	February	Burned Out						
38	13	1	1	0								
38	13	2	2	0								
38	4	2	2	0				Yes	Recommend	Yes	Considered	5
38	4	8	8	0								
39	13	2	2	0								
39	7	2	1	1	Unknown	Burned Out	Still there - no					
39	7	4	4	0								
39	5	6	6	0								
39	5	16	16	0								
39	5	52	52	0								

<u>Sample ID</u>	<u>Measure Code</u>	<u>Measure Qty</u>	<u>Located & Working</u>	<u>Delta</u>	<u>Removed when?</u>	<u>Removed why?</u>	<u>If removed, replaced by what?</u>	<u>Told Others?</u>	<u>Did They Install?</u>	<u>Did You Install Other Measures?</u>	<u>Measure Details</u>	<u>Satisfaction</u>
39	4	2	2	0								
39	13	2	2	0								
39	12	4	4	0				No	NA	No		5
40	13	3	3	0								
40	13	16	16	0								
40	13	6	6	0								
40	5	8	8	0								
40	5	8	8	0								
40	5	8	8	0								
40	12	4	4	0								
40	11	6	6	0				No		No		5
41	13	3	3	0								
41	13	4	5	-1								
41	13	30	30	0								
41	13	2	2	0								
41	3	4	4	0								
41	11	30	30	0				No		No		5
42	13	3	3	0								
42	13	7	7	0								
42	4	12	12	0								
42	4	20	20	0								
42	4	10	8	2	Could not be							
42	11	2	2	0				No		No		5
43	13	4	4	0	Unknown	Burned Out	Still there - no					
43	13	16	16	0								
43	13	40	40	0								
43	7	48	47	1								
43	7	24	24	0								
43	7	24	24	0								
43	7	40	40	0								
43	11	88	88	0				Yes	No, just told	No		5
44	13	4	4	0								
44	13	18	16	2	Could not be							
44	4	4	4	0								
44	12	9	9	0				Yes	No	No		5
45	7	28	28	0								
45	4	2	2	0								
45	12	1	1	0								
45	11	28	28	0				No	NA	Yes	More	5
46	4	6	6	0								
46	4	48	48	0								
46	12	24	24	0				No		No		5

<u>Sample ID</u>	<u>Measure Code</u>	<u>Measure Qty</u>	<u>Located & Working</u>	<u>Delta</u>	<u>Removed when?</u>	<u>Removed why?</u>	<u>If removed, replaced by what?</u>	<u>Told Others?</u>	<u>Did They Install?</u>	<u>Did You Install Other Measures?</u>	<u>Measure Details</u>	<u>Satisfaction</u>
47	13	2	2	0								
47	13	16	16	0								
47	7	48	47	1								
47	13	2	2	0								
47	11	64	64	0				Yes	Related	No		5
48	13	4	3	1	Unknown	Burned Out	Incandescent					
48	13	15	15	0								
48	13	8	8	0								
48	5	4	4	0								
48	13	2	2	0								
48	11	8	8	0				No		No		4
49	4	32	32	0								
49	12	15	15	0				No		No		5
50	13	2	2	0								
50	13	4	4	0								
50	13	4	4	0								
50	13	8	8	0								
50	13	14	14	0								
50	7	4	4	0								
50	5	12	12	0								
50	4	24	24	0								
50	12	20	20	0								
50	11	30	30	0				Yes		No		5
51	4	16	16	0								
51	12	8	8	0								
51	11	32	32	0				No		No		5
52	13	1	1	0								
52	13	3	0	3	Unknown	Burned Out	Incandescent					
52	13	5	4	1	Unknown	Burned Out	Incandescent					
52	13	4	4	0				No		Yes	Participated	4
52	13	4	4	0								
52	13	4	4	0								
52	7	2	2	0								
52	7	18	18	0								
52	13	3	3	0								
52	11	20	20	0								
53	13	8	8	0								
53	13	8	8	0								
53	13	10	10	0								
53	11	10	10	0				No		No		4
54	13	88	88	0								
54	13	20	20	0								

<u>Sample ID</u>	<u>Measure Code</u>	<u>Measure Qty</u>	<u>Located & Working</u>	<u>Delta</u>	<u>Removed, when?</u>	<u>Removed, why?</u>	<u>If removed, replaced by what?</u>	<u>Told Others?</u>	<u>Did They Install?</u>	<u>Did You Install Other Measures?</u>	<u>Measure Details</u>	<u>Satisfaction</u>
54	13	8	8	0								
54	7	20	20	0								
54	11	20	20	0				No		Yes	During fairly	3
55	13	4	3	1	Unknown	Unknown	Incandescent					
55	13	4	4	0								
55	7	32	32	0				No	NA	No		5

Appendix B. Measure Distribution and Verification

Table B.1: Program Measures

Measure	No. Participants with Measure	Quantity of Measures Installed	Expected kW Savings	Verified Deemed Wattage (Y/N)
100 W HID / Incandescent basecase	1	12	1.758	N
4 Foot T8	1	1	0	N
Delamping: 4-foot, T-12 lamp removal	97	2,601	113.124	Y
Delamping: 8-foot, T-12 lamp removal	58	735	59.838	Y
New Exit Sign / incandescent Base case	16	42	1.457	N
Premium T8 & Ballast new 4 foot lamp	1	2	-0.061	N
Premium T8 & ballast: 2-foot lamp / T12 & EE magnetic ballast base case	18	106	1.19	N
Premium T8 & ballast: 3-foot lamp / T12 & EE magnetic ballast base case	5	28	0.379	N
Premium T8 & ballast: 4-foot lamp / 34 WT12 & EE magnetic ballast base case	76	2,081	19.206	Y
Premium T8 & ballast: 4-foot lamp / 40w T12 & EE magnetic ballast base	58	1,535	22.893	Y
Premium T8 & ballast: 8-foot lamp / T12 & EE magnetic ballast base case	9	154	1.568	N
Premium T8 & high power ballast: 4-foot lamp / 34 WT12 & EE magnetic ballast base case	136	3,378	-10.306	Y
Premium T8 & high power ballast: 4-foot lamp / 40w T12 & EE magnetic ballast base	29	501	2.507	Y
Premium T8 & low power ballast: 4-foot lamp / 34 WT12 & EE magnetic ballast base case	139	3,112	34.66	Y
Premium T8 & low power ballast: 4-foot lamp / 40w T12 & EE magnetic ballast base	43	1,397	26.331	Y
Premium T8 lamp / Incandescent	2	16	1.19	N
Standard CFL: 14-26 watts / incandescent base case	67	392	21.182	N
Standard CFL: 5-13 watts / incandescent base case	4	18	0.833	N
Wall- or ceiling-mounted occupancy sensor/ manual base case	1	1	0.364	N
Overall*	145	16,112	298.1	

* Participants typically install more than one measure type, so the sum of "number of participants with measure" is greater than 145.