2003 STATEWIDE EXPRESS EFFICIENCY PROGRAM MEASUREMENT AND EVALUATION STUDY

Study ID# SW205.01

March 21, 2005

Prepared for California's Investor-Owned Utilities:

Pacific Gas and Electric Company
San Diego Gas and Electric Company
Southern California Edison Company
Southern California Gas Company

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Measurement and Evaluation
Customer Energy Efficiency
Policy, Evaluation & Regulatory Requirements Section
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As part of its Customer Energy Management Programs, Pacific Gas and Electric Company (PG&E) has engaged consultants to conduct a series of studies designed to increase the certainty of and confidence in the energy savings delivered by the programs. This report describes one of those studies. It represents the findings and views of the consultant employed to conduct the study and not of PG&E itself.

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2003 STATEWIDE EXPRESS EFFICIENCY PROGRAM

MEASUREMENT AND EVALUATION STUDY

FINAL

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STATEWIDE EXPRESS EFFICIENCY PROGRAM EVALUATION

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EXECUTIVE SUMMARY

This executive summary highlights the findings and recommendations from the 2003 Statewide Express Efficiency Program Measurement and Evaluation Study. Express Efficiency is a business prescriptive retrofit program for customers with peak demand less than 500kW, funded by the California Public Goods Charge (PGC) and administered under the auspices of the California Public Utilities Commission (CPUC). Express Efficiency has been designed to be run on a consistent, statewide basis by the four investor owned utilities (IOUs): Pacific Gas and Electric (PG&E), San Diego Gas and Electric (SDG&E), Southern California Edison (SCE) and Southern California Gas (SCG). The Express Efficiency program offers financial incentives (rebates) to qualifying customers for installing selected energy-efficient technologies.

In late 2003, the CPUC authorized the Express Efficiency program to increase incentive levels by up to 60% for energy efficient measures for small and medium-sized customers. The incentive structure was modified in Fall 2003, and had an immediate effect on participation. In addition, the CPUC repealed the eligibility requirement that precluded customers from participating if their aggregate demand exceeded 500 kW. As a result, large chain accounts were again allowed to participate in the program, however individual accounts with demand greater than 500 kW were still ineligible. These changes contributed to a successful year in 2003, as the program exceeded its statewide kWh and kW targets, and nearly doubled its therms goal.

The 2003 Express Efficiency evaluation addresses several objectives: The evaluation (1) verifies energy savings, (2) assesses accomplishments (including hard-to-reach (HTR)), (3) evaluates program process, (4) assesses the program's influence on the participants' purchase decision, and (5) benchmarks program success with respect to its cost-effectiveness.

To meet these objectives a variety of primary and secondary data sources were utilized. Telephone interviews were conducted in July 2004 with customers who purchased a rebated item (participants). Interviews were also conducted with lighting vendors, and utility and program staff to support the evaluation objectives. Secondary data sources used included a four-year history of program tracking data, and CPUC quarterly program reports submitted by the IOUs.

Below are the key findings and recommendations that were a result of this study.

PROGRAM PARTICIPATION AND AWARENESS

Participation. The Express Efficiency program offered prescriptive rebates to <500kW nonresidential customers.

Statewide, the program reported exceeding its kWh and kW goals, and nearly doubling its therm goal, with the IOUs claiming ex ante energy savings of 267GWh, 52 MW, and 7.5 Mtherms. These reported accomplishments are similar to the 2002 program, where Express achieved savings of 305GWh, 50 MW, and 4.1 Mtherms.

Furthermore, all four IOUs met or exceeded their HTR goals, with HTR customers comprising about two thirds of all participant applications. Lighting continued to dominate the 2003 Express program, accounting for 86% of savings. Again, the most dominant measure was CFLs, accounting for over two-thirds of the program's kWh energy savings.

Over the past three program years, changes in program eligibility and incentive structures have affected program accomplishments.

- **PY2001.** Large customers (>500kW) were allowed to participate in the program in 2001, at the height of the energy crisis. As a result average job size increased dramatically: compared to 2000 the average rebate was nearly three times as large, and the average energy savings was four times as large. With the larger customers participating, the mix of rebated measures was also more diversified, with CFLs hitting a three-year low, and T-8s and HVAC hitting a three-year high. Furthermore, more office buildings and institutional customers participated.

- **PY2002.** Large customers and large chain accounts were ineligible, and the program focused on CFLs, resulting in a smaller job size and lower rebate per kWh saved. With the focus on CFL installations in smaller businesses, community and personal service organizations participated at relatively high rates.

- **PY2003.** Large chain accounts were allowed back into Express. The program continued to focus on CFLs, resulting in a fairly small job size—despite the chain eligibility—and low rebate per kWh saved.

Although the 2002 and 2003 program achieved their savings at a much lower cost per kWh saved, relative to 2001, this is primarily attributable to the high level of CFLs installed through the program. Furthermore, these program years were likely to have many lost opportunities with other measures. It is likely that many potential T-8 retrofits and other measures were being ignored by contractors marketing the program in order to get an easy CFL sale. Also larger job sizes, like that seen in 2001, help improve program cost-effectiveness, as fixed costs associated with application, rebate incentive and inspection processing are reduced (larger jobs requires fewer applications to meet energy savings targets).

HTR Participation. All four IOUs met their HTR targets, and three exceeded their goals. For example, HTR customers accounted for 68% of PG&E applications. Express Efficiency continues to serve the HTR segments (primarily geographic location and business size) well, in particular with respect to the number of applications submitted by HTR customers. The renters and non-English speaking customers have not been a primary focus for Express or other third party programs.

Large Chain Accounts. A potential issue with allowing large chain accounts to re-enter the express program is that this would cause smaller customers to be under-served and large chain customers to be over-served. Even though large chain accounts comprise 40% of all kWh energy usage among the eligible market for Express, these customers accounted for only 10% of all Express applications and 20% of rebates and energy savings. This actually demonstrates that large chain accounts were underrepresented compared to the remaining eligible market.

Verification of Accomplishments. Overall, the Express Program's accomplishments and measure installations were verified through an analysis of program tracking data, IOU inspection data, verification phone surveys, on-site verification audits and a CFL lighting logger study.

- **Measure Verification.** The number of units reported as being rebated through the program in the Final Fourth Quarter CPUC workbook matched the program tracking systems for each IOU.

- **HTR Verification.** The percent of participants that received incentives in HTR segments (based on geographic location and business size) as reported in the Final Fourth Quarter CPUC Report narrative also matched the program tracking systems.

- **IOU Inspection Procedures and Results**. The processes used by the IOUs for conducting their own inspections on measure installations was confirmed through an analysis of each IOU's inspection database. However, it was found that SCG performed a small number of supplementary inspections that were not randomly selected, but this did not jeopardize the integrity of the program's accomplishments.

- **Phone Verification**. 662 telephone surveys with participants verified that the rebated equipment was installed and matched the program tracking system. Overall 98% of the measure installations asked about had been installed.

- **On Site Verification**. 100 on-site verification audits across 56 measure categories verified the equipment that was installed. 97% of lighting measures were found to have been received by the customer, and 100% of all non-lighting measures. Furthermore, 88% of CFLs were found to be in place and operating, 94% of other lighting measures, and 100% of all other equipment.

- **CFL Lighting Logger Study**. Lighting loggers were installed for approximately 2 months at 60 sites that had installed CFLs. Overall, CFLs were estimated to operate for approximately 2,709 hours per year, a third lower than current ex ante estimates. On-site data collection also revealed that approximately 95% of the lamps installed were integral, and based on the manufacture's rated lifetime for integral CFLs, had a measure life of 7,962 hours. Based on this manufacture's rated life and the estimated annual operating hours, integral CFLs are expected to have a 3 year effective useful life (EUL), only 38% of the current ex ante EUL.

- **Evaluation Adjustments to Ex Ante Energy Savings** – From above, there are three key results from this evaluation that could be used to adjust the IOU's ex ante energy savings claims that would provide a more accurate representation of the energy savings actually achieved by the 2003 Express Efficiency program. These three adjustments include (1) the 97% adjustment to demand and energy savings for lighting measures as a result of the on-site verifications, (2) the 32% adjustment to annual energy savings for CFL measures as a result of the operating hour assessment, and (3) the 38% adjustment to lifecycle energy savings for CFL measures as a result of the EUL assessment. Applying these adjustments to the ex ante energy claims would result in a reduction to the program's overall annual kWh energy savings by 24%, and a reduction to the lifecycle kWh energy savings by 41%.

Awareness. Vendors were the biggest source of awareness for participants. One in three participants in the 2003 Express program learned about the program through a vendor. Nearly one in four participants (23%) learned about Express through mass media (i.e. IOU brochures in the mail, bill inserts, television, radio, and newspapers).

Recommendations

Program Design Considerations. Having four diverse program years, where the program eligibility and incentive structures have changed so dramatically allows for a unique opportunity to understand how these types of changes affect the program's accomplishments:

- As seen in 2000, if enough incentive is provided to the vendors, they will get very small customers to participate in large numbers.

- As seen in 2001, if larger customers are allowed into the program, the result is larger jobs (which helps reduce fixed application, incentive processing and inspection costs) as well as improvements in the diversity of measures installed in the program.

- As seen in 2002 and 2003, focusing on smaller customers and providing incentives that are relatively much higher for CFLs than other measures, results in a program driven by CFLs that may result in many lost energy efficiency opportunities.

A program that is trying to balance equity considerations, diversity in its measure mix, maximize its energy savings given a fixed budget, and maintain cost effectiveness can learn from each of these program years. By properly incenting vendors to market to small customers and diversifying the measures installed (e.g., higher incentives to very small customers, higher incentives for non-CFL measures, or higher incentives for applications with multiple measures); and by allowing larger customers into the program, but limiting their participation; it may be possible to meet all of these program objectives.

Employ a Cost-Effective and Comprehensive Inspection Process. Consider adopting an inspection policy, if not already in place, that performs 100% inspection on all "large" applications (e.g., over $2,500 in rebate) and a random sample of 10-20% of all other applications (similar to PG&E). This will likely cover a majority of the measures installed with respect to energy savings and rebates paid, but only require a minority of the sites being visited. Furthermore, 100% inspection should be performed on vendors that have failed a significant number of previous inspections. For example, each month an inspection report could be generated that identifies all vendors that had failures that exceeded a certain threshold (e.g., more than 20% failed during the month). For the following month, all applications submitted by that vendor should be inspected until the vendor's failure rate falls below the threshold for an entire month (or two consecutive months). The IOUs sometimes penalize vendors that require follow-up inspections for applications that fail initial inspections. Also consider increasing penalties for vendors that have required follow-up inspections on multiple applications (increase the penalty as the number of follow-up inspections increase).

Future Use of Verification Results. The primary purpose for adjusting the ex ante energy savings was to provide a more accurate estimate of the energy savings likely achieved by the 2003 Express Efficiency program. However, some of these evaluation findings should also be considered for use in future program planning.

- **Verification results** – We do not recommend using the 3% adjustment on CFLs and other lighting measures, as this is a program-year specific result. However, the IOUs could consider using their inspection databases to estimate the percentage of equipment that was rebated but never received by the customers, for those applications that did not received an inspection.

- **Annual CFL kWh energy savings** – we do recommend adjusting the CFL kWh energy savings, utilizing the results of the annual hours of operation assessment. We recommend that the DEER team work with Quantum Consulting on how best to utilize this data to develop revised deemed savings estimates in DEER for CFLs.

- **Effective Useful Life for CFLs** – we do recommend that the EUL for CFLs be revised. We recommend that CFLs be divided into two measure categories, integral and modular. Ultimately, we feel that a measure life study be conducted for CFLs. Until then, we recommend that the EUL for *integral* CFLs be based on a measure life of 7.962 hours. Therefore, the EUL should be calculated as a function of the annual hours of operation assumed (EUL = 7,962 divided by annual hours of operation).

PROCESS FINDINGS

Program Marketing. While mass marketing made many people aware of Express, far fewer *participants* learned of the program through IOU marketing. It was vendors who were better able to seal the deal. Customers respond to personal contact, such as interactions with vendors and utility representatives. Small customers need this type of handholding to move them towards energy efficiency. However, vendors tend to approach larger customers more often than small ones.

Vendors are Influential. Vendors are important players in the Express market. Most customers use a vendor. Person to person contact is an important motivator in getting customers to participate in an energy efficiency program. Sixty-three percent of participants said their vendor was "very important" in deciding what equipment to install. The majority of customers sign rebates over to vendors. Finally, nearly 80% of participants were satisfied with their contractor.

Participants are Very Satisfied. Participants continue to be quite satisfied with the program. Satisfaction levels remained high for the overall Express program and performance of equipment purchased. However, customers were less satisfied with their bill savings.

Online Applications Not Gaining a Foothold with Participating Customers. Express Efficiency applications are available online. 39% of participants were aware that applications were available online—less than 2002, and only 16% of participants downloaded an application, according to participant surveys. Furthermore, only a quarter prefer an electronic application process to the current mail-in rebate. This lack of interest in online offerings may be due to the character of small businesses—sole proprietorships, restaurants, groceries, and retailers do not use the Internet at work (as opposed to offices, which tended to download more applications). This lack of online interest or capacity suggests that developing an online application process for these businesses would not be well-received by small businesses.

Recommendations

Market the Program through Vendors. Customers tend to be moved to participate by person to person contact, not mass marketing.[1] Since mass media is less effective in driving participation, Express marketing managers could shift their marketing mix to better leverage contractors.

VENDOR FINDINGS

CFLs Pay off for Vendors. High volume CFL vendors do much more business through Express (47% of sales) than high volume T-8 vendors (18% of sales). The program encourages vendors to promote CFLs, as there appears to be a payoff to participating in the program for CFL vendors in particular.

CFL Installation Practices. In 2002, the Express program allowed Energy Star rated integral CFLs to be rebated through the program for the first time. The potential implication is that integral CFLs have a lot shorter life expectancy than the modular ballast. The program is shifting away from modular to integral CFLs, a shift verified by our on-site inspections, which found 95% of the CFLs to be integral. An additional concern with CFL installations is the potential for bulbs being rebated that are not installed, but instead left behind for certain reasons (e.g. as replacements for failures). The majority (59%) of CFL installers report that they leave extra lamps. These vendors tend to leave roughly 2.4% extra lamps (i.e. 2.4% of total job size). A third concern is that the program doesn't require pre-installation inspections. The program eligibility requirements are that CFLs are installed to replace existing incandescent bulbs. On average, 11% of the CFLs installed by vendors replaced existing CFLs[2].

Vendors Expect a Sale in 2004. despite the program's shift to higher baseline rebates instead of seasonal promotional pricing, most vendors expect sales to continue.

Vendor Opinions on Rebate Levels. With respect to *increasing* rebates, no other measure is mentioned as much as linear fluorescent fixtures. About two-thirds of the respondents mentioned increasing some form of linear fluorescent — 4 foot T-8, 8 foot T-8, T-5, T-8 with electronic ballast, and high bay. Furthermore, no vendor suggested decreasing rebates for linear fixtures. The desire for higher linear fluorescent rebates is not surprising, since high volume T-8 vendors do not do much T-8 business through the program at the current rebate levels. Vendors suggested that CFL rebates be *decreased* more than any other measure, however less than 20% of the respondents made this suggestion. In addition, vendors recommend smaller rebates for controls and sensors.

CFL Sales more Sensitive to Rebates than T8 sales. Vendors were asked to estimate the effect of hypothetical changes in rebate level under two scenarios – if rebates were doubled or if

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[1] Myers, Mayo and Friedman (2004). "Who Says Small Commercial Customers Can't be Reached? A Few Program Concepts for Attracting Small Customers to Energy Efficiency Programs," ACEEE Summer Study. This paper is based on 2002 Express Efficiency evaluation findings, again validated in PY03 (see Chapter 3).

[2] Note that this is a percentage of all bulbs installed, not just rebated CFLs.

rebates were cut in half – on their Express sales. T-8 vendors are less sensitive to a change in rebate levels than CFL vendors. A change in T-8 rebate levels more does not drastically affect vendors' sales, whereas CFL sales seem to depend on rebates far more than T-8 sales. However, T-8 vendors are more sensitive to increases in rebates relative to decreases in rebates than CFL vendors, likely because vendors are not currently doing as much business through Express as are CFL vendors.

Rebate Structure Deters Vendors from Delamping. Many vendors opt not to promote delamping, even though customers usually choose to delamp when a vendor recommends it. The current rebate structure creates a potential disincentive for customers to delamp. From the customer's perspective, out of pocket costs after rebate to delamp are two and a half times more than as straight 4 lamp T-8 retrofit, based on analysis of measures costs from the 2001 DEER database[3].

Third Party Competition is not Crippling the Express Program. While over three-quarters of vendors interviewed participate in other utility energy efficiency programs, the majority continue to do more business through Express than other programs.

Recommendations

Significantly Increase Delamping Rebate. There is considerable remaining potential for delamping. Vendors that practice delamping indicate that delamping is appropriate 44% of the time, however, only 58% of vendors interviewed practice delamping. This implies that there is potential for an additional 18% of all T-8 retrofits to include delamping, or an increase of 71% over the current rate (26% of all T-8 jobs include delamping, according to the vendors interviewed). An analysis of payback was confirmed by vendor interviews, which suggested that one of customers' primary reasons for not delamping when it is appropriate, is due to cost. Some consideration should be given to revising delamping rebates, making them more in line with T-8 rebates, and ideally higher.

Vendor Suggestions for Program Enhancements. Vendors had a variety of suggestions for improving the process of participating in Express Efficiency.

- **Speed up application process**. Vendors confirmed IOU program staff beliefs that application turnaround time is closely linked to vendor satisfaction. Vendors had several suggestions for speeding up the application process.
  - *Electronic application submission*.
  - *Build payment release form into application*. Integrating the separate payment release form on the application would streamline the application process for vendors.
- **Allow large customers into Express Efficiency**. A few vendors cited the cost of reaching small customers and their lack of knowledge ("most businesses don't have a full-time facilities manager who speaks electricity") as barriers to serving that market.

[3] It is important to note however, that this analysis was based on the 2001 DEER data, which may be somewhat outdated, and is currently being updated.

- **Eliminate restrictions on high bay lighting.** There are two stipulations that do not affect energy savings and compromise vendors' ability to engineer super energy efficient systems:
  - fixtures must be mounted over 15 feet
  - rebate are only paid for 4- and 6-lamp fixtures

  Eliminating those restrictions would help vendors engineer super energy efficient high bay systems.

- **Educate vendors on delamping strategies**, such as different light levels for various applications so they are confident that their light levels are appropriate for their application.

PROGRAM INFLUENCE

Program Encourages Participants to Accelerate Lighting Retrofits. 86% of CFLs and 79% of lighting systems were working fine when they were replaced, suggesting the program may be accelerating adoption of lighting measures. By contrast, most air conditioning and refrigeration equipment are replaced when it malfunctions or fails.

CFL Participants were Influenced to Replace Burn-outs with New CFLs. 84% of CFL participants indicated that they will replace their CFLs with new CFLs when they burn out or fail. 64% indicated that the program was "very influential" in getting them to use CFLs in the future. Furthermore, 86% indicated they would still install CFLs without a rebate.

Over Half Aware of Rebate Before Buying Equipment. 59% of participants were aware of the rebate before purchasing equipment that qualified for the rebate. People that are aware first are more likely to be influenced by the program than those that already made a decision to purchase before becoming aware of the rebate.

The Rebate Influenced the Majority of Customers to Purchase. Overall, only one-quarter of the participants (weighted by energy savings) claimed they would have purchased the same equipment at the same time, in the absence of the program. This finding is similar to previous results from PG&E's pre-1998 Commercial Energy Efficiency Incentive (CEEI) impact evaluations. In for paid years 1996, 1997, and 1998, the CEEI Retrofit Express (the precursor to the Express Efficiency program) was found to have self-report free ridership rates that ranged from 25% to 37% for lighting technologies, and 39% to 56% for HVAC technologies.

Program Strongly Affected CFL Participants. Only 14% of CFL purchasers (weighted by energy savings) would have purchased the same equipment at the same time in the absence of the program. A third of CFL participants indicated they would have purchased standard light bulbs, and another 28% would not have purchased any lighting equipment.

Program Strongly Affected Very Small and Rural HTR Customers. Overall, only 15% of the very small customers (weighted by energy savings) claim they would have purchased the same equipment in the absence of the program. Furthermore, 38% claim they would have purchased standard equipment, and another 17% would have not made any purchase. Similarly, urban

customers are twice as likely (29%) to purchase the same equipment at the same time than their rural counterparts (14%). These findings suggest that free ridership may be lower among some HTR segments, such as very small and rural customers.

Sensitivity to Rebate. Participants who are most influenced by the program (those that would not have made a purchase, or would have purchased standard equipment in the absence of the program) were very sensitive to the rebate level. Only 21% of these customers claim they would have purchased the same equipment at the same time if rebates were reduced by half. Overall, if rebates were reduced by half, it is likely that 40% of the participants would have dropped out, which are the customers that are least likely to be free riders.

Recommendations

Consider a Small Reduction to CFL Rebates. Because of participants' sensitivity to rebate levels, rebate amounts should not be significantly reduced. Although CFL participants are the most sensitive to the rebate amount, these participants also report receiving their installation at no cost 60% of the time. Therefore, there may be some room to reduce CFL rebates, but a severe reduction could have negative implications on the programs net performance.

COST-EFFECTIVENESS BENCHMARKING

In a benchmark of cost-effectiveness tests between Express Efficiency and seven similar local programs, Express compared favorably. From an TRC perspective, Express appears to be much more cost-effective (with a TRC of 3.2 versus an average of 2.1 for the seven other local programs evaluated). But when its measure mix is normalized to account for the significantly higher proportion of CFLs installed (as well as other assumptions about cost and savings), the Express Efficiency program is very similar to the seven local programs (after 50% of the Statewide Nonresidential Audit costs are added to the Express program cost). Its important to note that Express does have the advantage of more economies of scale, serving the entire state; it is a mature, branded program, being in place since 1998; and tends to serve less very small and rural customers (six of the seven local programs serve 100% hard-to-reach customers).

The metrics where Express appears to be much more cost-effective is with Levelized Costs per kWh saved and Program Administrator Test, which are significantly more cost-effective than the local programs, even after normalizing for the differences in measure mix, and cost and savings assumptions. Because Express pays significantly lower incentive levels, it is able to generate much more benefit per program dollar. However, as mentioned above, its participant population is not comprised of hard-to-reach customers to the extent that the local programs are. The local programs feel they must pay higher rebate levels to penetrate the hard-to-reach market and overcome first cost market barriers.

Therefore, the local programs and the Express program complement each other well. Express is able to capitalize on a broader customer base and maximize its net benefit given its fixed resources; whereas the local programs can cost-effectively serve the hard-to-reach market (from a TRC standpoint) relying on higher incentives. Furthermore, the direct installation approach taken by the local programs has resulted in a much more comprehensive set of lighting measures being installed.

Recommendations

Reduce HTR Targets and Expand Eligibility Requirements to Include Large Customers Some consideration should be given to relaxing the hard-to-reach goals placed on Express, and extending eligibility to large customers (>500 kW), as this will allow the Express program to further maximize its net benefit, and allow the local programs to fill the need of serving the hard-to-reach segments. As discussed above, in 2001 when large customers (>500 kW) were allowed into the program to aid it in maximizing its energy savings in light of the energy crisis, the result was larger jobs (which helps reduce fixed application, incentive processing and inspection costs), as well as improvements in the diversity of measures installed in the program.

Furthermore, the combined portfolio of the Express Efficiency program, with its HTR goals, and the local programs, which are almost exclusively serving the HTR market, may result in creating an inequity among the non-HTR customers. In other words, there may be too much emphasis on HTR customers at the portfolio level.

The CPUC currently has two somewhat conflicting policy objectives of maximizing the program portfolio's net resource benefit and meeting equity considerations. The first objective can be achieved by selecting programs with high Program Administrator Test ratios. The second objective can be achieved by selecting programs that can cost-effectively (with a minimum TRC of 1) serve the HTR market. For the nonresidential market, the Express Efficiency program is clearly better suited to meet the objective of maximizing the net resource benefit, while the local programs are better suited to meet the objective of cost-effectively reaching the HTR segments. Furthermore, the local programs are also better at minimizing lost opportunities, as they have proven the ability to install a more comprehensive mix of measures among HTR customers. Allowing the Express program to relax its HTR constraint and open its eligibility to the >500 kW market will further allow this program to maximize its net resource benefit given a restricted program budget. This recommendation is especially important for consideration in light of the aggressive energy savings goals, recently put forth by the CPUC in its Interim Opinion in Decision 04-09-060 on September 23, 2004.

PROGRAM DESIGN RECOMMENDATIONS

Based on the above findings and recommendations, there is a consistent theme with regard to HTR targets, program eligibility, and rebate levels. The local programs have illustrated their ability to serve the HTR markets cost-effectively, without relying on CFLs. Their participant population is weighted heavily towards rural customers, much more so than the Express program, indicating the two are not severely overlapping (which is also confirmed by the vendor interviews). Given the aggressive energy savings goals, recently put forth by the CPUC, as discussed above, energy efficiency programs in California will need to maximize the net resource benefit to the extent possible. The Express Efficiency program has illustrated that its rebate structure and program delivery are well suited to maximizing the net resource benefit. Therefore, if the objective of the Express Efficiency Program was to maximize its net resource benefit, the program could be allowed to operate without the constraints of HTR targets and limited customer eligibility. By developing a program portfolio that also includes local programs targeted at HTR customers, equity considerations can be met cost-effectively.

By shifting the program's emphasis away from smaller customers that require high incentive levels to participate (60% of all CFL participants received their measures for free), CFL rebate levels can be reduced, and "traded-off" for significantly higher delamping rebates. Higher delamping rebates will also spur more T-8 retrofits, resulting in more comprehensive projects that will not leave stranded opportunities.

Fortunately, the IOUs changed their rebate structure in 2004, which is fairly consistent with this recommendation. Rebates for 14-26 watt CFLs were reduced from $5.60 to $3.50, and delamping was increased from $2.40 to $6.00. Meanwhile, T-8 rebates were reduced from $6.80 to $4.25, properly incenting vendors to delamp as part of a T-8 retrofit, when appropriate.

RECOMMENDATIONS FOR FUTURE RESEARCH

As part of the PY2002 Express Efficiency program evaluation, a number of future research recommendations were made, some of which were implemented as part of this PY2003 evaluation. Outstanding recommendations, that we still feel are warranted include the following:

Lighting Impact Load Shape Measurement for T-8s. We recommend that existing metering studies conducted in the 1990's be unarchived, segmented, and re-weighted to reflect the current program mix, and used to develop T-8 impact load shape results for today's Express Efficiency program.

Measure Life Study for CFLs. CFLs are clearly the dominant measure in Express. Unfortunately, CFLs are a relatively new measure compared to the history of the Express program. Ninth year retention studies have been conducted on the pre-98 programs, such as PG&E's Retrofit Express program, which are providing valuable input for the development of accurate measure life estimates. However, CFLs were not a common enough measure in the pre-98 programs (not to mention the technology has changed significantly), and are not currently being adequately studied. Therefore, we recommend that a measure life study be conducted to update the current equipment useful life estimates for CFLs. A retention panel was developed as part of this PY2003 evaluation, which should utilized for this study.

Net-to-Gross Study for Express. The net-to-gross ratio used for Express is currently 0.96, which is primarily founded on free ridership and spillover estimates developed as part of the evaluation for the pre-98 programs. Both the target market and the measure mix for the current Express program have changed dramatically since the pre-98 programs. There is more emphasis on smaller and HTR customers, eligibility requirements have excluded large customers, and CFLs have become the dominant measure. Self-report analysis presented here indicates that free ridership for CFLs and HTR customers may be lower. Therefore, we recommend a more comprehensive NTG study be conducted.

Statewide Retrofit Express Billing Analysis. Following completion of the DEER Update Study, we recommend that a Statistically Adjusted Engineering (SAE) billing analysis study be conducted to examine the accuracy of those deemed savings estimates, and develop a set of SAE realization rates, representing the fraction of the deemed savings estimates realized in customer bills, to refine the measure savings estimates used for Express.

Tracking System Verification Study. We expect that the technical workpapers may be significantly revised to take advantage of the new DEER database. Therefore, a thorough verification study should be conducted to ensure that the workpapers are being revised correctly, and that the values are being properly propagated into the IOU tracking systems and CPUC reporting workbooks.

Additional research items that we recommend based on the findings from this PY2003 evaluation include:

HTR Study. We recommend that an HTR study be conducted on the nonresidential portfolio of statewide and local programs to determine if there are any customer segments that are being over or under served. Given the HTR targets Express Efficiency has, and the number of local programs targeted at HTR customers, it is possible that some HTR segments are being over served, and small and/or medium customers with demand between 20 and 500 kW may be under served.

Rebate Analysis. We recommend further analysis be conducted on rebate levels with the objective being to maximize a program's net resource benefit per rebate dollar. For example, in late 2003, rebate levels for delamping were only $2.40 compared to $6.80 for T-8s. Given the net resource benefit each measure provides, T-8s received on the order of 10 times more rebate per dollar of net resource benefit than delamping .

1. INTRODUCTION

This is the final report prepared for the 2003 Statewide Express Efficiency Program Measurement and Evaluation Study (hereafter referred to as "the study"). Express Efficiency is a business prescriptive retrofit program for customers with peak demand less than 500 kW, funded by California utility customers and administered under the auspices of the California Public Utilities Commission (CPUC).[4] Express Efficiency is run on a consistent, statewide basis by of the four investor owned utilities (IOUs): Pacific Gas and Electric (PG&E), San Diego Gas and Electric (SDG&E), Southern California Edison (SCE) and Southern California Gas (SCG). The Express Efficiency program offers financial incentives (rebates) to qualifying customers for installing selected energy-efficient technologies.

In late 2003, the CPUC authorized the Express Efficiency program to increase incentive levels by up to 60% for energy efficient measures for small and medium-sized customers. The incentive structure was modified in Fall 2003, and had an immediate effect on participation. In addition, the CPUC repealed the eligibility requirement that precluded customers from participating if their aggregate demand exceeded 500 kW. As a result, large chain accounts were again allowed to participate in the program, however individual accounts with demand greater than 500 kW were still ineligible. These changes contributed to a successful year in 2003, as the program exceeded its statewide kWh and kW targets, and nearly doubled its therms goal.

This evaluation examines the Program Year 2003 (PY03) experience. The study, prepared by an independent third party evaluation contractor, Quantum Consulting (QC), establishes baseline information for the nonresidential population, evaluation findings and program guidance.

1.1 STUDY OBJECTIVES

The 2003 Express Efficiency evaluation addresses several objectives: The evaluation (1) verifies energy savings, (2) assesses accomplishments (including hard-to-reach (HTR)), (3) evaluates program process, (4) assesses the program's influence on the participants' purchase decision, and (5) benchmarks program success with respect to its cost-effectiveness.

[4] Energy efficiency programs are funded from electric and gas public goods charge (PGC) funds, a charge applied to each customer's bill to support the provision of public goods. Public goods covered by California's PGC includes public purpose energy efficiency programs, low-income services, renewables, and energy-related research and development.

This study meets these research objectives by focusing on the following:

- **Participation Assessment**. Trends in Express participation are shown by each utility, technology, customer business type, and customer size. Participation trends are presented for program years 2000-2003. These historic trends are analyzed to determine the effects of repealing the 500 kW aggregation eligibility requirement, a ruling that excluded chains from participating in the program.

- **Verification activities**. To verify energy and peak demand savings, each utility's program tracking database was reviewed to verify that program accomplishments were accurately claimed. A telephone survey was conducted to verify measure installation. In addition, on-site verification audits were conducted to verify equipment that was installed and rebated under the Express program. Lighting loggers were also installed at 60 participating CFL sites, to estimate the measure's annual hours of usage, and assess the CFLs effective useful life.

- **Process Assessment**. A comprehensive process assessment employs participant survey data and interviews with program staff and lighting vendors to examine sources of program awareness, marketing, statewide coordination, factors that influenced participation, program effects, and participant satisfaction. In addition, vendors share expectations about seasonal promotions, third party competition, application and reservation process and ideas for program enhancements

- **Program Influence**. This study uses participant surveys and vendor interviews to examine the important issue of rebate influence and program effects (such as intentions to purchase future energy-efficient products). The effects of changes in the program's rebate structure on participation are assessed, using vendor and participant survey responses to determine sensitivity to rebate levels.

- **Program Benchmarking**. The benchmarking analysis compares the cost-effectiveness of the Express Efficiency program with similar local and third party programs offered in PY2003 (which also installed primarily lighting measures and were targeted at the very small and small nonresidential customers, often in rural areas). Budgets and program accomplishments for these CPUC-funded energy efficiency programs were analyzed to benchmark the Express Efficiency program's cost-effectiveness.

1.2 APPROACH

Study results are based on primary research conducted with customers and key market actors and analysis of participant tracking data and utility customer information databases.

Primary Data Collection

Participant Surveys. Telephone interviews were conducted in July 2003 with 542 participants who purchased a rebated item (out of a total of 9,342 participants). The participant survey was segmented by IOU service territory and technology. For CFL measures, the survey was also segmented by customer size and key building type. For each segment, the participant sample frame was drawn relatively proportional to participation across measures. Measures that had

more significant participation received proportionally more sample. Exhibit 1-1 shows the distribution of completed surveys with participating customers.

Exhibit 1-1
Participant Survey Disposition

Technology	Business Type	Size	PG&E	SCE	SCG	SDG&E	Total	Percent of Population
Agriculture			5	1	6	0	12	16%
Food Processing			0	0	7	0	7	13%
HVAC - A/Cs			4	5	0	6	15	2%
HVAC - Other			12	2	9	8	31	4%
Lighting - Other			9	14	0	7	30	3%
Lighting - T8/T5, Elec Bal, Delamp			31	37	0	15	83	4%
Refrigeration			8	1	0	5	14	5%
Water Heating			2	0	31	9	42	17%
Lighting - CFL	Office	Small	12	15	0	4	31	6%
Lighting - CFL		Medium/Large	12	15	0	10	37	10%
Lighting - CFL	Lodging	Small	13	5	0	2	20	10%
Lighting - CFL		Medium/Large	12	10	0	10	32	7%
Lighting - CFL	Retail	Small	12	21	0	3	36	4%
Lighting - CFL		Medium/Large	8	21	0	1	30	8%
Lighting - CFL	Restaurant	Small	11	11	0	0	22	6%
Lighting - CFL		Medium/Large	8	23	0	2	33	5%
Lighting - CFL	Other	Small	12	15	0	6	33	3%
Lighting - CFL		Medium/Large	12	15	0	7	34	5%
TOTAL			183	211	53	95	542	6%

Participant telephone survey results are segmented by "hard-to-reach" (HTR) customers, defined by the CPUC as those who do not have easy access to program information or generally do not participate in energy efficiency programs due to language, geographic, company size (less than 10 employees or <20kW) or tenant barriers. These HTR segments are defined as:

- Language: primary language spoken at business is other than English, and/or
- Geographic: businesses located in areas other than the San Francisco Bay Area, San Diego area, Los Angeles Basin or the City of Sacramento, and/or
- Size: Very small businesses using <20kw or less than 10 employees, and/or
- Tenant: customers who lease rather than own their facilities

The program made concerted efforts to get participation by customers in these hard-to-reach market sectors. Therefore, the report segments HTR customers in order to assess how well the program served these customers.

Verification surveys. Telephone surveys and on-site audits were conducted to verify measure installation:

- A **telephone survey** was conducted to verify that the IOU's customers installed the measures specified in the their program tracking database. The survey asked a sample of 662 participants (7% of the total population of 9,342 participants) if they recalled receiving a rebate for the measures recorded in the IOU's tracking database.

- **On-site audits** On-site audits were completed for a sample of 100 sites, covering 56 measure groups and 168 equipment installations. The equipment rebated through the Express Program was grouped into four measure categories (CFL, other lighting measures, HVAC, and refrigeration/other). Exhibit 1-2 shows the distribution of on-site survey completes, and the corresponding number of sites in the population.

- **Lighting Loggers.** Lighting loggers were installed in all 60 of the on-sites that had CFLs installed. These loggers were put in place for approximately two months in order to estimate the CFLs annual hours of operation. Make and model information were also collected for the CFLs in order to determine the manufacturers' rated lifetime. The effective useful life (EUL) for CFLs could then be estimated by dividing the average manufacturer's rated life by the estimated annual hours of operation.

Exhibit 1-2
On-site Survey Disposition

Technology	Business Type	Size	PG&E Sites	SCE Sites	SCG Sites	SDG&E Sites	Total Sites	Total Percent of Population
Agriculture			0	0	1	0	1	1.4%
HVAC - A/Cs			1	1	0	0	2	0.3%
HVAC - Other			2	0	0	0	2	0.3%
Lighting - CFL	Office	S	2	2	0	2	6	1.1%
		M/L	2	6	0	1	9	2.4%
	Lodging	S	2	2	0	1	5	2.6%
		M/L	0	3	0	0	3	0.7%
	Retail	S	3	2	0	1	6	0.7%
		M/L	4	2	0	1	7	1.9%
	Restaurant	S	3	0	0	0	3	0.9%
		M/L	2	5	0	0	7	1.1%
	Other	S	4	1	0	1	6	0.5%
		M/L	0	6	0	2	8	1.1%
Lighting - Other			1	3	0	1	5	0.4%
Lighting - T8/T5, Elec Bal, Delamp			8	9	0	2	19	0.9%
Refrigeration			2	0	0	0	2	0.7%
Water Heating			0	0	9	0	9	3.5%
TOTAL			36	42	10	12	100	1.1%

Lighting Vendor Interviews. 30 lighting vendors that participated in the 2003 Express Efficiency program were interviewed because most of the program's energy savings accomplishments came from compact fluorescents and T-8s. The intent was to learn about participating lighting vendors' experience with the program, not to conduct supply-side baseline research. Previous research has characterized the commercial lighting market in California based on data from interviews with electrical vendors and distributors (1999 State-Level Small/Medium Nonresidential MA&E Study). An integrated database of vendors that participated in the Express Efficiency program in 2003 served as the sample frame for these lighting vendor interviews. A total of 290 vendors were identified that performed installations for rebated measures. The sample design included some of the larger vendors (those involved with a large number of installations). Overall, the 30 vendors accounted for 1,718 applications, or about 18% of the 9,573 applications submitted in 2003.

Stakeholder interviews. A series of interviews were conducted with SCE, SCG, SDG&E and PG&E Express program staff in June 2004. These qualitative interviews were conducted to discuss program evaluation objectives; obtain program manager input to help refine objectives and research issues that shaped subsequent interviews with vendors and customers; and to educate the evaluation team on program design, verification process, marketing activities, and vendor operations. Interview findings are reported in Appendix A and summarized in the Process Assessment (chapter 3).

Secondary Data Sources

Participant Tracking Data. Quantum Consulting obtained 2000, 2001, 2002 and 2003 Express tracking system records and assembled summary statistics on participation to date. Participation trends were compared over time. This analysis was used to identify gaps and unexpected trends in program participation.

IOU Quarterly Reports. We reviewed quarterly reports for IOU impact/participation goals, progress towards goals, program budgets, 2003 expenditures, and marketing activities.

1.3 REPORT OUTLINE

The report consists of seven chapters:

Chapter 1 (Introduction) states study objectives, summarizes research activities and data collection efforts.

Chapter 2 (Participation Assessment) provides a general overview of the Express Efficiency program, examines program accomplishments in terms of energy and demand savings and HTR penetration, provides historical participation trends, examines the effect of removing the aggregation restriction, and verifies the installation of measures in the program. The chapter relies on program tracking data, participant survey data, on-site verification data, and program staff interviews. Detailed tables with program participation, rebate dollars and energy savings for each IOU and various segments (i.e. technology group, business type, size, and HTR segment) can be found in Appendix B. The annual hours of operation and effective useful life (EUL) associated with CFLs is also assessed, and described in detail in Appendix H. Finally, the results of the verification, CFL operating hours assessment, and CFL EUL analysis are used to adjust the ex ante estimates of program savings to provide an estimate of what the program is most likely to have actually saved as a result of the measures installed under the program.

Chapter 3 (Process Assessment) reviews and assesses the implementation-related aspects of the Express Efficiency program. The chapter examines sources of awareness and program marketing, compares influence of various drivers on participants' decisions to purchase equipment, assesses customer satisfaction on various dimensions, discusses who filled out the application, awareness of online applications, and preference for application submission and looks at impact of reservation option and satisfaction with the process. Participant survey data and program staff interviews are the two primary data sources used to examine these process issues. Appendix C contains data tables that support these chapter findings.

Chapter 4 (Program Influence) considers the key question: is the Express Efficiency program getting customers to move towards energy efficient measures? Participant survey responses are utilized to examine program effects (e.g. future purchase intentions) and rebate influence, including how sensitive participants are to rebate levels. Appendix D contains survey data tables that support these chapter findings.

Chapter 5 (Lighting Vendor Assessment) presents results of interviews with 30 lighting vendors, program managers and participant surveys on the role that vendors played in their equipment purchases. The chapter describes IOU marketing efforts to vendors, based on interviews with program managers; and presents findings on vendor outreach to customers and their influence on customer decisions, based on interviews with Express participants. This chapter also characterizes interviewed vendors' participation in Express and their CFL installation practices, presents vendor opinions on the Express rebate structure and third party competition, their expectations about seasonal promotions, the influence of the rebate on CFL and T-8 sales and delamping efforts, and examines the application and reservation process and offers vendor suggestions for program enhancements. Appendix E contains survey data tables that support these chapter findings.

Chapter 6 (Benchmarking Cost Effectiveness) compares the cost-effectiveness of the Express Efficiency program with similar local and third party programs offered in PY2003. Seven similar local programs offered in 2003 that were implemented by both the California Investor Owned Utilities (IOUs) as well as independent third party administrators were selected for comparison to conduct this benchmark. In general, these programs installed primarily lighting measures, and were targeted at the very small and small nonresidential customers, often in rural areas. As part of the regulatory requirements, budgets and program accomplishments for CPUC-funded energy efficiency programs were made publicly available ,including estimated costs for administration, gross incremental measure costs, and program savings estimates. These budgets and program filings were analyzed to benchmark the Express Efficiency program's cost-effectiveness.

Appendices. The report has seven appendices:

- Appendix A presents the results of program staff interviews.
- Appendix B summarizes participation for the number of applications, total rebates paid, and total first year gross energy (kWh) savings by size, technology, and business type for each utility and statewide are shown for PY2000, 2001, 2002 and 2003.
- Appendix C contains participant survey responses on process-related issues.
- Appendix D provides participant survey data tables on program influence.
- Appendix E offers participant survey response relating to lighting vendors.
- Appendix F shows the firmographics of participating customers that were interviewed for this study.
- Appendix G has survey instruments for both participant surveys and lighting vendor interviews.

- Appendix H provides the detailed study results of the CFL annual operating hour and effective useful life assessment.

The chapters present high level findings, reserving detailed data tables for appendices. We report respondent data for participants across 25 segments. This high level of detail regarding consumer response to survey questions allows us to examine differences among the utilities and HTR customer segments (as defined by the CPUC). These detailed data tables are displayed in the appendices, where survey results are presented for:

- All customers.

- Hard-to-reach customers. Survey respondents and CIS data were used to classify each respondent into one or more of the HTR segments. The residential HTR definitions provided by the CPUC are:
  - Urban/rural. The IOUs define rural HTR customers by zip codes. For example, PG&E uses only geography to define HTR in their service territory, where zip codes outside the 9 Bay Area counties are considered HTR.
  - English/other language. Primary languages other than English include respondents who indicated they spoke a non-English language at their business.
  - Tenant/building owner. This information comes from customer's self-reported facility ownership.
  - Size. Customers are segmented by very small (0-20kw), small (20-100kW), and medium (100-500kW).
  - Any HTR: this segment includes respondents whose businesses is located in a rural area, or speak a language other than English at the business, or lease a facility, or use less than 20kW.
  - Non-HTR. This segment captures English-speaking, urban businesses that own their facilities and use more than 20kW.

- IOU: participants are segmented by PG&E, SCE, SCG and SDG&E.

- Business Type: survey responses are segmented by seven business types: office, retail, restaurant and grocery, institutional, industrial, miscellaneous commercial and agriculture.

- Measure Type: survey responses are segmented by customers that installed CFLs versus other measures.

2. PARTICIPATION ASSESSMENT

This chapter provides a general overview of the Express Efficiency program, compares the program to previous years, and verifies the installation of measures in the program. The following sections are:

- **Program Description:** This describes the target market for the program and gives an overview of measures rebated.

- **Program Performance:** This outlines program targets and accomplishments in terms of energy and demand savings and HTR customers reached.

- **Historical Participation Trends:** This highlights trends in participation over the past four years with respect to the types of measures installed, the size of the customers participating, the types of businesses participating, application size and cost effectiveness trends.

- **Effects of Aggregation Eligibility Rule:** This discusses effect of removing the aggregation rule from the eligibility requirements.

- **Verification Results:** This verifies measure accomplishments and verifies that the measures rebated and tracked in the program tracking system were in fact installed by the customer.

- **CFL Operating Hour and Effective Useful Life Assessment:** This summarizes the results of the detailed study, which is presented in Appendix H. The study is based on 60 CFL sites that were monitored with lighting loggers.

- **Adjusted Program Savings Estimates:** This provides an estimate of what the Express Efficiency Program's savings are after adjusting the ex ante estimates to account for the verification results, and CFL operating hour and EUL assessment.

To assess these issues, we rely on program tracking data, participant survey data, on-site verification data, program staff interviews, and IOU Final Fourth Quarter Reports. Detailed tables with program participation, rebate dollars and energy savings for each IOU and various segments (i.e. technology group, business type, and size) can be found in Appendix B.

2.1 2003 EXPRESS EFFICIENCY PROGRAM DESCRIPTION

The 2003 Express Efficiency program focused on small and medium-sized business customers (with electricity demands <500 kW) for installing selected lighting, refrigeration, air conditioning, agricultural and gas technologies proven to increase energy efficiency. Rebates (paid directly to the customer or the participating vendor) were given for retrofit or replacement of existing inefficient equipment with qualifying new energy-efficient equipment.

Target Customer Segments

The CPUC has encouraged the utilities to connect with hard-to-reach (HTR) nonresidential customers –customers who do not have easy access to program information or generally do not participate in energy efficiency programs due to a language, business size, geographic, or tenant barriers. The CPUC defines these HTR segments as:

- Language - Primary language spoken is other than English,
- Business Size – Very small (<20 kW in peak demand) and/or less than ten employees,
- Geographic - Businesses in areas other than the San Francisco Bay Area, San Diego area, Los Angeles Basin or City of Sacramento,
- Tenant - customers who lease rather than own their facilities.

In 2003, eligibility for the Express Efficiency program changed to allow large chain accounts back into the program. In 2002, the CPUC excluded large chain accounts[5] with a new eligibility requirement and precluded customers from participating if their aggregate demand exceeded 500 kW. Small chains were eligible for the 2002 Express Efficiency program while large chains were excluded.

- **Large chain**: a chain whose total aggregated demand over all customer accounts is greater than 500 kW, or whose annual gas consumption is greater than 250,000 therms.
- **Small chain:** a chain whose total aggregated demand over all customer accounts is less than or equal to 500 kW, and whose annual gas consumption is less than or equal to 250,000 therms.

While this program restriction was removed in 2003, the effects of this rule on the eligible population are examined in Section 2-4.

2.2 PROGRAM PERFORMANCE TARGETS AND ACCOMPLISHMENTS

Energy Savings

For the 2003 program year, performance targets were set for the program in terms of energy and demand savings. Specifically, the statewide savings targets were 226,875,800 kWh, 43,699 kW, and 3,989,157 Therms. As shown in Exhibit 2-1[6], statewide, the program exceeded its kWh and kW targets, and nearly doubled its therm target.

[5] Chain accounts are customers with two or more accounts that have the same billing address and same customer name but with more than one service address.

[6] Targets and accomplishments obtained from IOU Final Fourth Quarter Program Reports, filed with the CPUC in May 2004.

Exhibit 2-1[7]
Summary of 2003 Express Efficiency Energy Savings Targets and Accomplishments As Reported in the IOUs' Final Reports

Utility	CPUC Target	Actual and Committed	%Target Reached
PG&E			
Energy Savings, kWh	103,626,059	102,383,284	99%
Demand Reduction, kW	18,977	17,166	90%
Therms Reduction	1,218,079	1,264,045	104%
SCE			
Energy Savings, kWh	71,869,000	123,173,440	171%
Demand Reduction, kW	15,000	27,177	181%
Therms Reduction			
SDG&E			
Energy Savings, kWh	51,363,655	37,177,828	72%
Demand Reduction, kW	9,722	7,318	75%
Therms Reduction	608,596	1,682,855	277%
SCG			
Energy Savings, kWh	17,086	4,390,166	25695%
Demand Reduction, kW			
Therms Reduction	2,162,482	4,511,578	209%
Statewide			
Energy Savings, kWh	226,875,800	267,124,718	118%
Demand Reduction, kW	43,699	51,661	118%
Therms Reduction	3,989,157	7,458,478	187%

[7] In the 2003 Final Quarterly Report, SCE reported the results of a pilot program designed to introduce hard-to-reach customers to the benefits of energy efficiency. These were primarily small customers who, in some cases, may not have participated in energy efficiency programs in the past. Enrolled customers were given CFLs, free of charge, to take back to their place of business. A subsequent inspection of approximately 35% of these businesses revealed that 60% had not been actually installed. As a result, SCE elected to discount the total savings claimed as a part of this pilot program. The total savings claimed for this pilot program was 3,178,506 kWh and 678 kW. Although it was SCE's intent, as reported, to discount these savings amounts from the final savings claims for PY2003, SCE inadvertently failed to deduct the actual savings from the final program submittal. As a result, SCE plans to file an errata report with the CPUC to reflect this reduction in their savings claim. This change would reduced SCE's claim in Exhibit 2-1 to 119,994,934 kWh (167% of the target) and 26,499 kW (177% of the target). At the statewide level this would reduce the savings claim to 263,946,212 kWh (116% of the target) and 50,983 kW (117% of the target).

SCG and SCE outperformed PG&E and SDG&E. It should be noted that SCG's kWh goal was quite low, but their kWh savings accomplishments were nonetheless impressive. SCG staff attributed the program's success to strong sales of greenhouse curtains and thermostats (rebates for these measures were increased in 2003).[8] Thermostats generated the bulk of the kWh savings accomplishments and greenhouse heat curtains contributed to the therms savings accomplishments. SCE attributes its success directly to the new rebate levels introduced in 2003, noting that lighting led the field, especially CFLs and 4-foot T-8s. High bay lighting was a popular measure for SCE. A fourth quarter promotion boosted business and tapped SCE's rebate budget. SDG&E was fairly low as far as kWh savings and demand reduction accomplishments. However, they were quite high in therms reduction. This can also be attributed to a high volume of greenhouse heat curtains rebated.

Section 2.7 below applies the results of this evaluation's verification study, and CFL operating hour and EUL assessment to the IOU's ex ante savings claims, to illustrate how these values would be affected.

Exhibit 2-2 summarizes the lifecycle energy savings and TRC net resource benefits the Express Efficiency program accomplished, as claimed by the IOUs in the Final Fourth Quarterly Report.

Exhibit 2-2
Summary of 2003 Express Efficiency Energy Accomplishments
Lifecycle Energy Savings and TRC Net Resource Benefits
As Reported in the IOUs' Final Reports

Utility	Actual and Committed
PG&E	
Energy Savings, Lifecycle kWh	1,027,582,674
Therms Reduction, Lifecycle	14,132,433
TRC Benefits, $	$58,812,652
SCE	
Energy Savings, Lifecycle kWh	1,264,406,332
Therms Reduction, Lifecycle	
TRC Benefits, $	$65,939,032
SDG&E	
Energy Savings, Lifecycle kWh	364,456,081
Therms Reduction, Lifecycle	23,031,733
TRC Benefits, $	$26,735,064
SCG	
Energy Savings, Lifecycle kWh	48,286,740
Therms Reduction, Lifecycle	38,613,819
TRC Benefits, $	$16,012,752
Statewide	
Energy Savings, Lifecycle kWh	2,704,731,828
Therms Reduction, Lifecycle	75,777,985
TRC Benefits, $	$167,499,499

[8] Appendix Exhibit B-1 shows 2003 participation by technology

As mentioned above, Section 2.7 below applies the results of this evaluation's verification study, and CFL operating hour and EUL assessment to the IOU's ex ante savings claims, to illustrate how these values would be affected.

Hard to Reach

All four IOUs met their HTR targets, and three exceeded their goals. For example, HTR customers accounted for 68% of PG&E applications, as shown in Exhibit 2-3. Presented are the percentages of participants that received incentives in HTR segments (based on geographic location and/or business size) that were (1) reported by each IOU as the program goal (2) found in their program tracking database.

Exhibit 2-3
Summary of 2003 Express Efficiency Hard-to-Reach Targets and Accomplishments

Utility	% of Applications	
	CPUC Target	Result
PG&E	41%	68%
SCE	47%	60%
SDG&E	56%	56%
SCG	42%	55%

We verified the numbers in the tracking database as matching those reported by each IOU in their Final Fourth Quarter CPUC narrative, which is discussed in section 2-5.

2.3 HISTORICAL PARTICIPATION TRENDS

Participation summaries for the number of applications, total rebates paid, and total first year gross energy (kWh) savings by size, technology, and business type for each utility and statewide are shown for PY2000, 2001, 2002 and 2003 in Appendix B (Participation Data Tables). Below we highlight some of the key trends in participation over this four year period with respect to the types of measures installed, the size of the customers participating, and the types of businesses participating.

Customer Size Trends

Exhibits 2-4 and 2-5 present the trends in participation from 2000 to 2003 by the size of the customer participating.[9] Shown are the percentage of applications that were rebated for a given year, and the percentage of energy savings within a given year by customer size. Although large customers were ineligible to participate in 2000, 2002 and 2003, there are still some customers that show up as large due to the way in which we classified customers using 2002 CIS data.

[9] Exhibits 2-5 and 2-7 present average job size (average kWh savings/application).

With respect to the number of customers participating, PY2000 saw a very large proportion of very small participants, primarily due to the vendor bonus that was paid as an incentive for vendors to market to very small customers. In PY2000, 86% of the applications rebated were submitted by very small customers, compared to less than half in PY2001, PY2002 and PY2003. In PY2001 large customers were admitted into the program for a portion of the year, accounting for 14% of the applications and 45% of the energy savings. In 2002 and 2003, large customers were no longer eligible again. In 2003, about half of the applications were from very small customers and a third from small customers, however the very small customers comprised only a fifth of the energy savings. Participation was very similar between 2002 and 2003 in every size category.

Exhibit 2-4
Applications Rebated by Customer Size, PY2000-2003

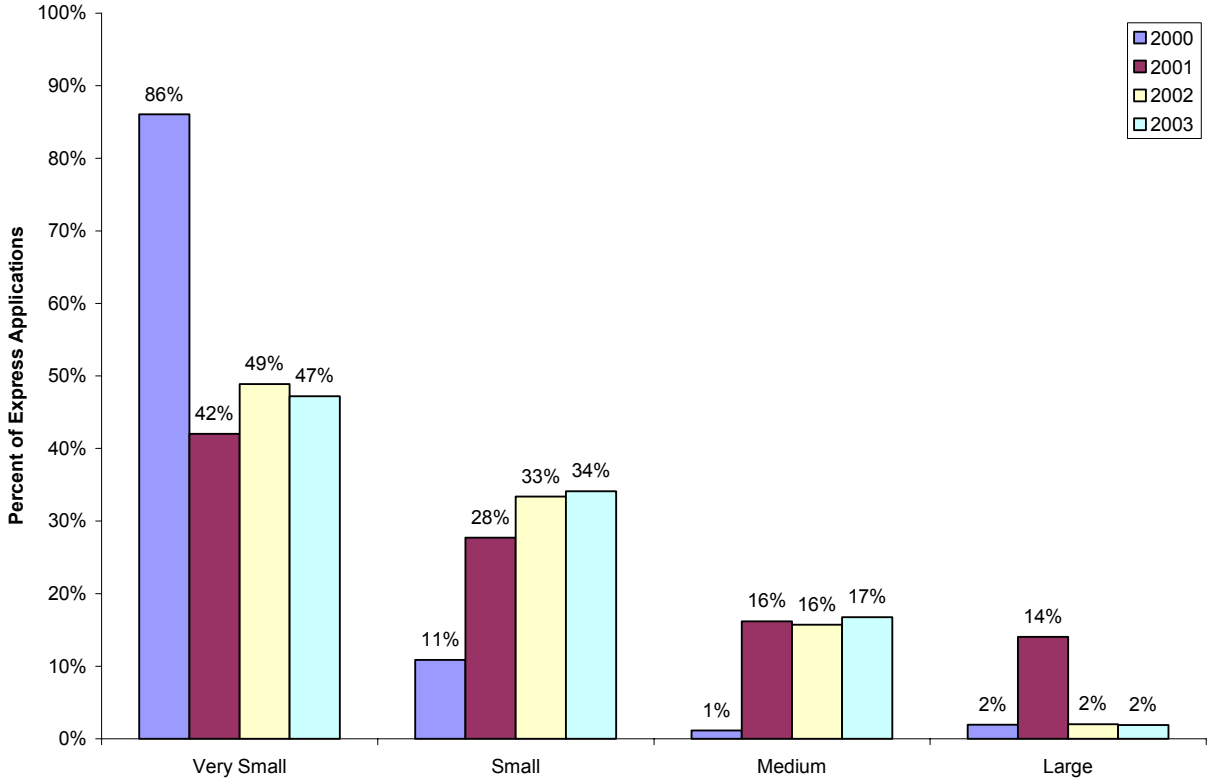
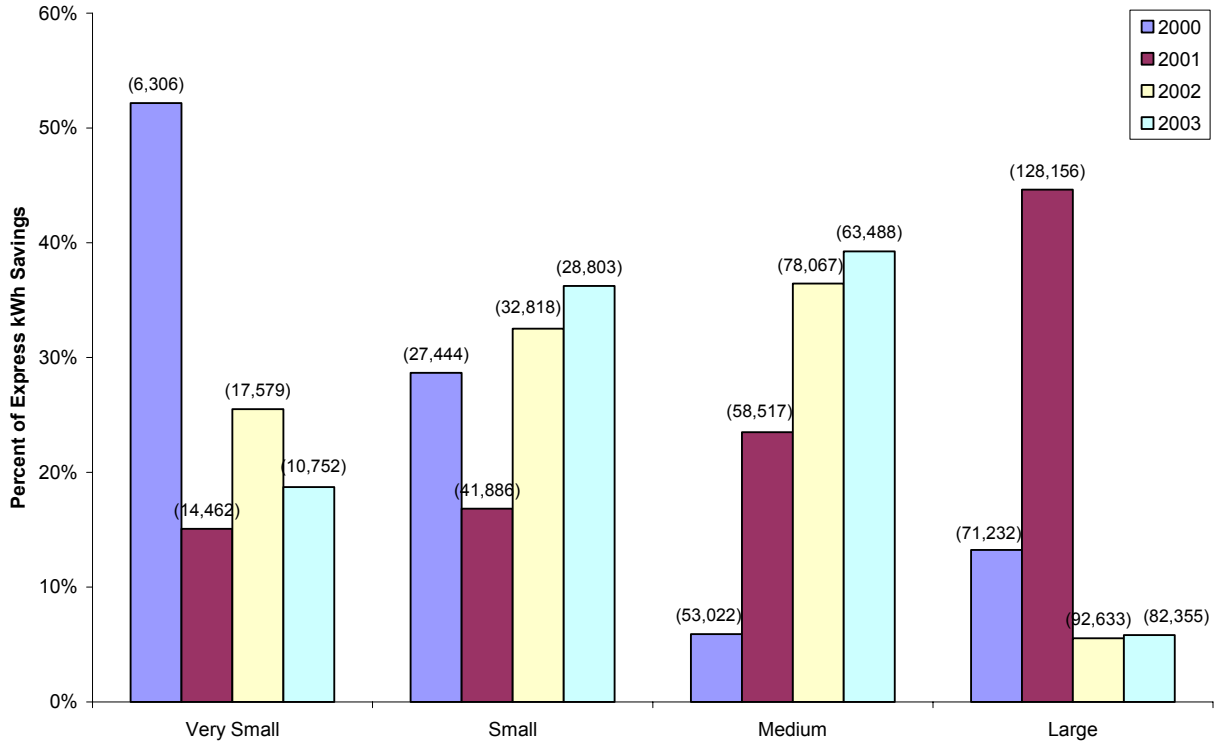


Exhibit 2-5
kWh Energy Savings by Customer Size, PY2000-2003



*Note: Number on bar is average kWh savings per application

Measure Trends

Exhibits 2-6, 2-7 and 2-8 present the trends in participation from 2000 to 2003 among five key measure groups: CFLs, T-8s, miscellaneous lighting, HVAC and other measures. Shown are the percentage of applications that were rebated for a given year that contained at least one of these measures, and the percentage of energy savings and rebates paid within a given year associated with the measures.

Clearly, lighting measures have dominated the program over the past 4 years in terms of both applications and energy savings. In PY2001, when large customers were admitted into the program, there was more diversity among the measures installed. In PY2002, the program became primarily a CFL program with T-8's taking a back seat, and this trend continued in PY2003.

Exhibit 2-6
Applications Rebated by Technology, PY2000-2003

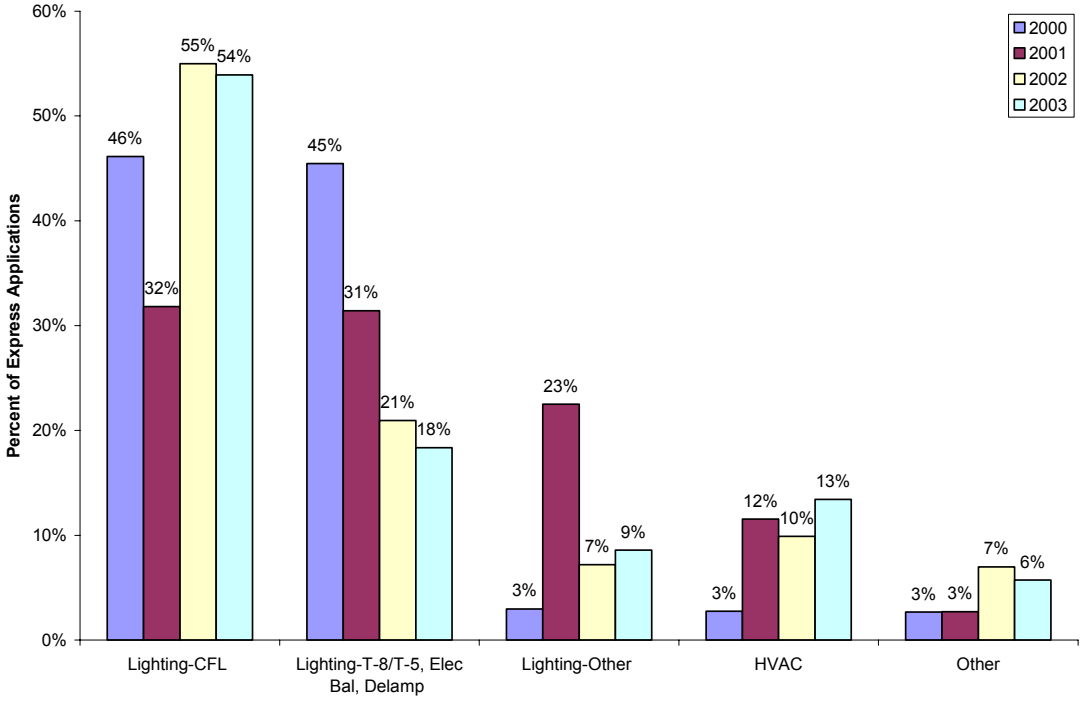
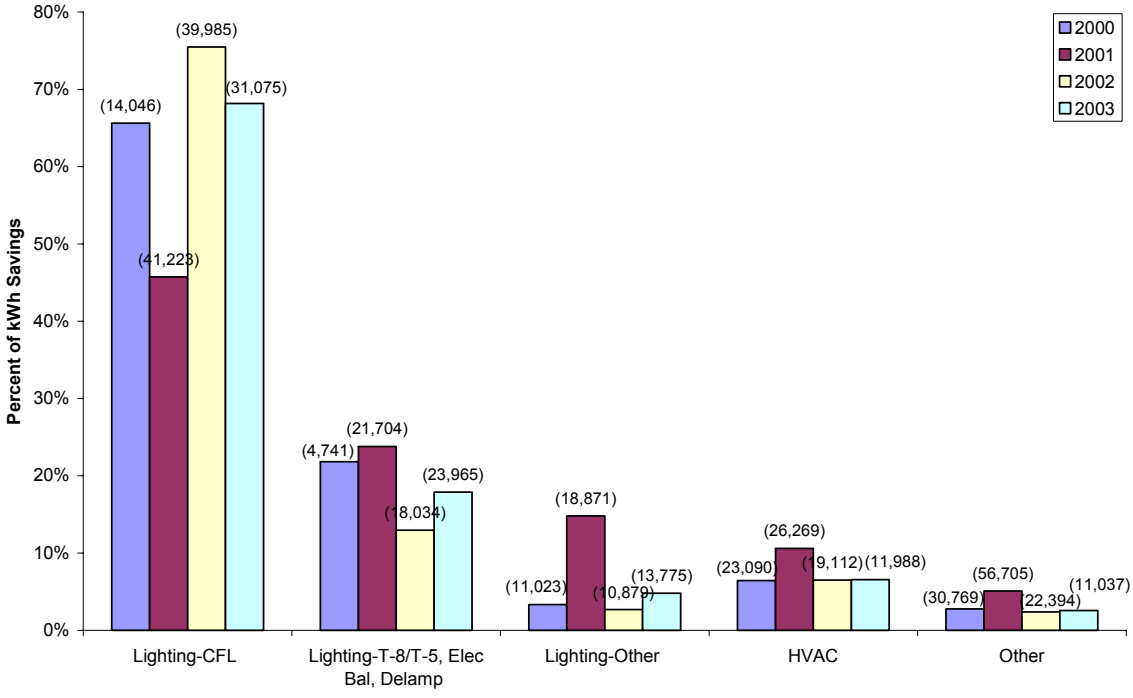
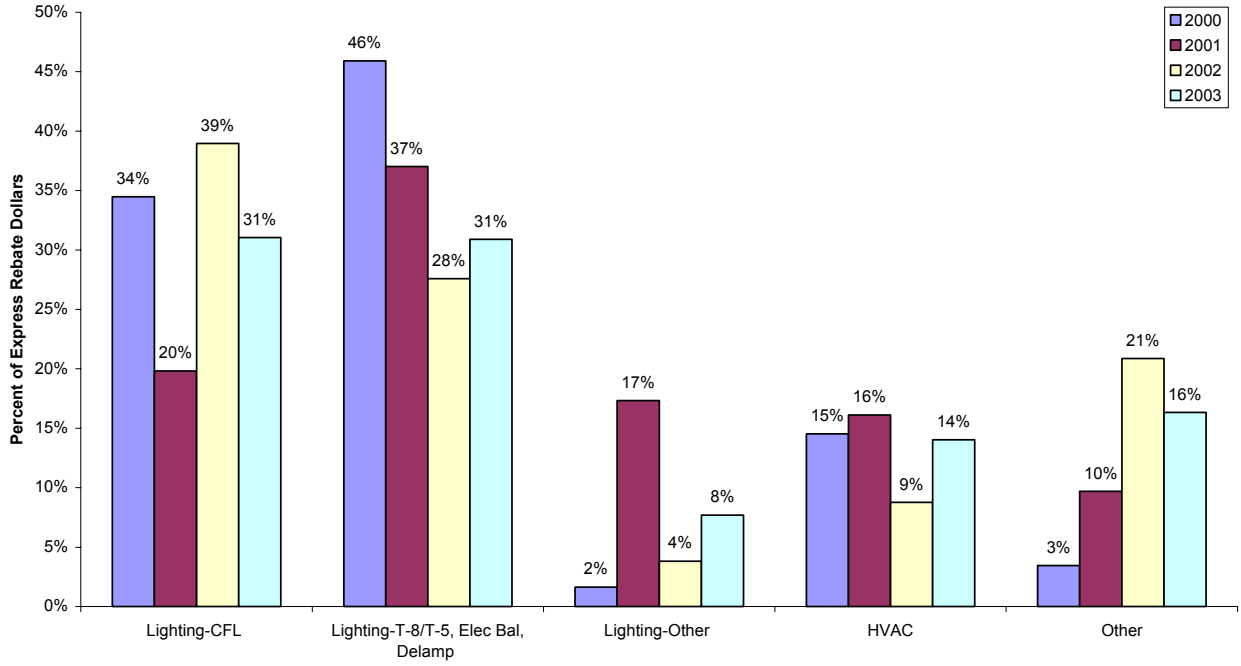


Exhibit 2-7
Measure kWh Energy Savings by Technology, PY2000-2003



*Note: Number on bar is average kWh savings per application

Exhibit 2-8
Rebate Dollars Paid by Technology, PY2000-2003



Business Type Trends

Exhibits 2-9 and 2-10 present the trends in participation from 2000 to 2003 among five key business type groups: office, miscellaneous commercial, retail, restaurants & groceries, and other. Shown again are the percentage of applications and the percentage of energy savings within a given year.

The trends among business types again follow the changes that have occurred with program eligibility and incentives. In 2000, when the program was focused on the very small customers and vendors received bonuses, many of the small retail, restaurant and grocery stores participated. When larger customers were admitted in 2001, we saw more activity among the office and "other" (primarily institutional) business types. In 2002 when CFL installations dominated and smaller customers were emphasized, many miscellaneous commercial establishments participated (e.g. personal services and community services). In 2003, participation was fairly even across all of the business categories.[10]

[10] It is important to note that over half of the "Other" business type is comprised of records in the program tracking data for which we were unable to obtain valid SIC codes to create the business type classification.

Exhibit 2-9
Applications Rebated by Business Type, PY2000-2003

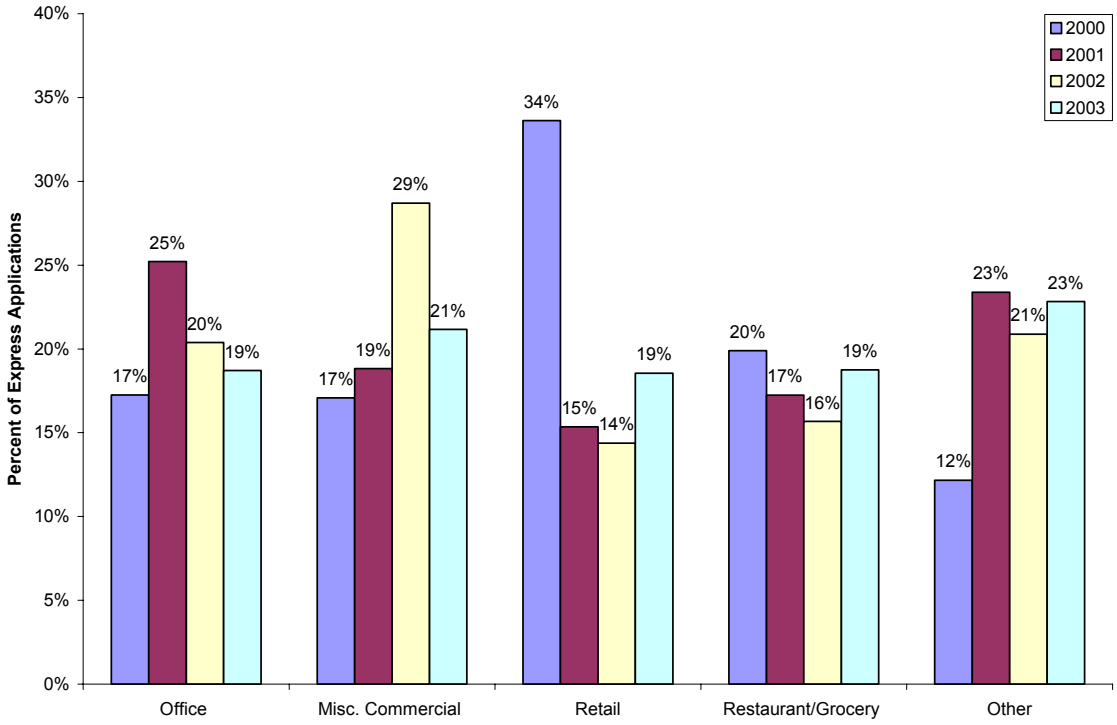
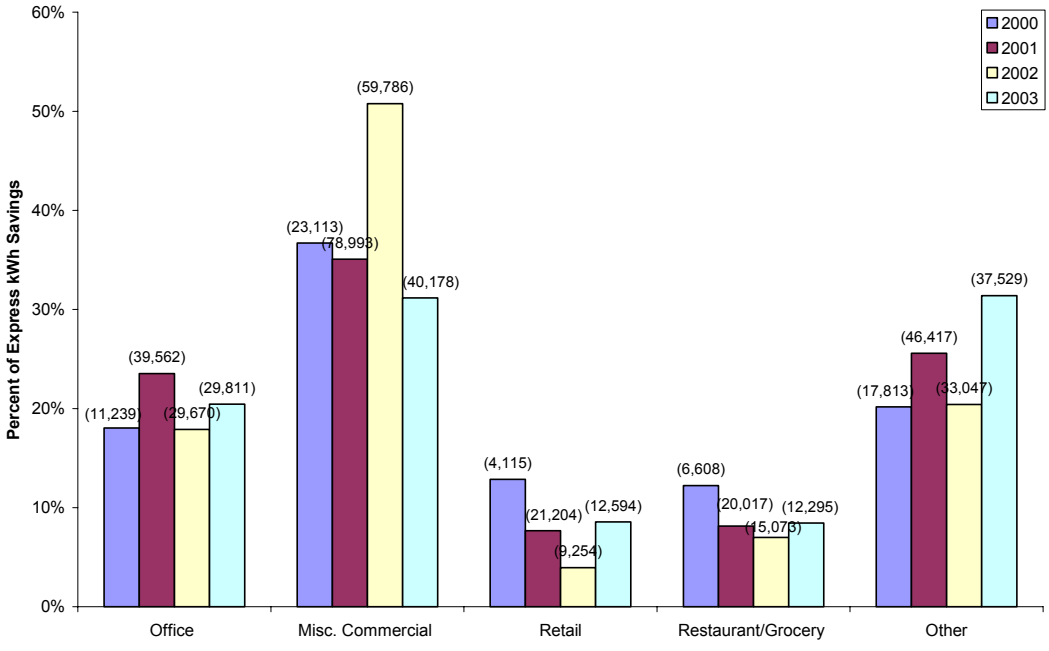


Exhibit 2-10
Measure kWh Energy Savings by Business Type, PY2000-2003



*Note: Number on bar is average kWh savings per application

Application Size and Cost-Effectiveness Trends

Exhibit 2-11 summarizes the Express Efficiency applications, rebate dollars, program budgets and energy savings over the past four years. Exhibit 2-12 presents the average rebate size per application, the average kWh energy savings per application and the average program cost per kWh energy savings (both first year saving and lifecycle) over the four year period.

The large number of applications in 2000 reflected the impact of vendor bonuses, which pushed vendors to pursue small customers. 2001 was a highwater mark for Express Efficiency in terms of energy savings and program expenditures. Despite a 2002 rebate budget that was 2.5 times smaller than 2001, the 2002 Express program managed to garner almost 70% as much savings as 2001, underscoring the cost-effectiveness of CFLs. The 2003 budget was similar to 2002, but savings dropped off slightly—saving about 90% of 2003 levels, likely a result of higher rebate amounts in 2003.

Looking at the average rebate and energy savings per application, we can see the effects of focusing on small customers in 2000 and allowing large customers into the program in 2001. The average rebate is nearly three times as large in 2001 compared to 2000, and the average energy savings is four times as large. Furthermore, the average program cost per kWh saved was a third higher in 2000 compared to 2001 due primarily to the vendor bonuses. In 2002, large customers and large chain accounts were ineligible, and the program focused on CFLs, explaining the smaller job size and lower program cost per kWh saved. In 2003, large chain accounts were allowed back in to the program as long as the individual account was under 500kW, but overall, the program still focused on CFLs and smaller customers. Although the 2002 and 2003 programs are much more cost-effective from a program cost per kWh saved perspective, the program is also likely to have many lost opportunities with other measures. Many potential T-8 retrofits may have been ignored by contractors marketing the program in order to get an easy CFL sale. Also, larger job sizes (like those in 2001) can help improve aspects of program cost-effectiveness, as fixed costs associated with application, rebate incentive and inspection processing are reduced (larger jobs require fewer applications to meet energy savings targets).

Exhibit 2-11
Historical Express Efficiency Summary[11]

PY	Customers		Rebate	Energy Savings	Total Program
	Unique Sites	Applications	Dollars	kWh	Budget
2000	25,745	27,606	$28,601,065	296,742,627	$39,002,828
2001	10,681	11,072	$30,927,758	467,036,559	$45,581,918
2002	8,400	9,628	$12,855,669	318,691,965	$20,097,382
2003	9,342	9,573	$12,660,701	278,485,302	$21,362,747

[11] Accurate program budget information in 2000 and 2001 that corresponded directly to the savings and rebate information contained in the program tracking databases was not available for all utilities. Therefore, the statewide program budgets for 2000 and 2001 were estimated based on rebate amounts and kWh savings for some utilities. Although these are budgets, the overall results are directional and unlikely to be affected by small changes in the budgets.

Exhibit 2-12
Historical Job Size and Cost-Effectiveness

	2000	2001	2002	2003
Rebate per Application	$1,036	$2,793	$1,335	$1,323
kWh Savings per Application	10,749	42,182	33,101	29,091
Program Budget (Cents) per First Year kWh	13.1	9.8	6.3	7.7
Program Budget (Cents) per Lifecycle kWh	0.0126	0.0085	0.0065	0.0075

Having four diverse program years, where the program eligibility and incentive structures have changed so dramatically allows for a unique opportunity to understand how these types of changes affect the program's accomplishments:

- As seen in 2000, if enough incentive is provided to the vendors, they will get very small customers to participate in large numbers.

- As seen in 2001, if larger customers are allowed into the program, the result is larger jobs (which helps reduce fixed application, incentive processing and inspection costs) as well as improvements in the diversity of measures installed in the program.

- As seen in 2002 and 2003, focusing on smaller customers and providing incentives that are relatively much higher for CFLs than other measures, results in a program driven by CFLs that may result in many lost energy efficiency opportunities.[12]

A program that is trying to balance equity considerations, diversity in its measure mix, maximize its energy savings given a fixed budget, and maintain cost effectiveness can learn from each of these program years. By properly incenting vendors to market to small customers and diversifying the measures installed (e.g., higher incentives to very small customers, higher incentives for non-CFL measures, or higher incentives for applications with multiple measures); and by allowing larger customers into the program, but limiting their participation; it may be possible to meet all of these program objectives.

2.4 EFFECTS OF AGGREGATION ELIGIBILITY RULE

A new eligibility requirement was imposed on the 2002 Express Efficiency program, which excluded customers whose aggregate demand across all of their accounts exceeded 500 kW. However, this requirement was removed from the 2003 program. The restriction was initially applied in 2002 for equity reasons: to ensure that larger customers were not over-participating in the program. However, in the 2002 program evaluation this was not found to be the case. Conversely, the aggregation rule likely created a larger inequity, causing 23% of the total nonresidential market (in terms of annual kWh consumption) to be displaced with no clear energy efficiency program option.

[12] Rebate sensitivity is explored further in Chapter 4 and 5.

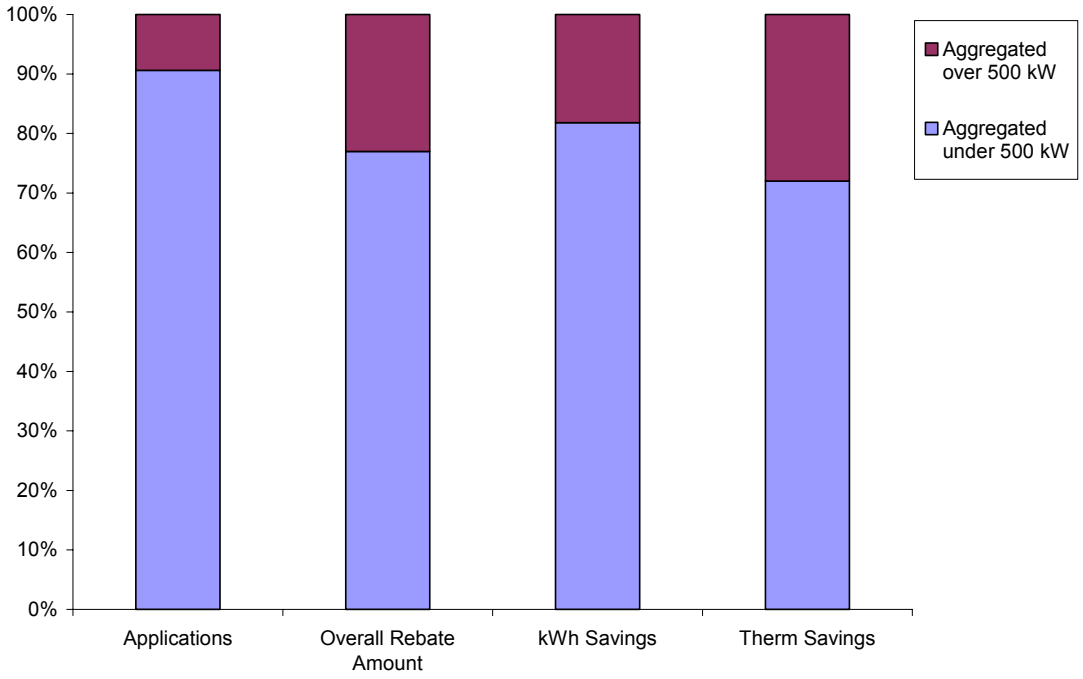
ALJ Malcolm adopted the utilities' proposal for the 2003 Express Efficiency program, to rescind the 500 kW aggregation rule in her March 3, 2003 Interim Ruling, which stated:

> "In 2003 the utilities propose to replace the "Account Aggregation Rule" with a program eligibility limit of 500 kW per site. They argue that the account aggregation rule was difficult for customers to understand in 2002, and "created a significant barrier for eligible and non-eligible customers alike." SCE, SDG&E and SCG would address the possibility that hard-to-reach small business may be disadvantaged by participation by large chain stores by limiting incentives to any single corporation or chain account customer to $25,000.
>
> For whatever reasons, some utilities have not met Express Efficiency program goals in 2002. SCE, SDG&E, and SCG's proposed modification is designed to improve energy savings while balancing our concerns that this program target smaller customers. We adopt the utility proposal to permit incentives of up to $25,000 per corporation or chain account customer for work done at sites with loads not exceeding 500 kW. This proposal would apply to all utilities."

The IOUs believed that allowing large chain accounts back into the program would help them meet their energy savings goals. However, there was concern that this would cause smaller customers to be under-served and large chain customers to be over-served. Exhibit 2-13 below shows the percent of the 2003 participant population that would not have been eligible to participate had the aggregation rule been in place. Only about 10% of applications and 20% of rebates and energy savings would have been affected. This actually demonstrates that larger customers were underrepresented compared to their contribution to PGC funds, as this segment represented 40% of kWh usage among the <500 kW market (i.e. accounts whose individual demand was <500 kW).[13]

[13] Quantum Consulting 2002 Statewide Express Efficiency Program Measurement and Evaluation Study, Section 2-5

Exhibit 2-13
Effect Aggregation Rule Would Have Had on 2003 Statewide Express Applications



2.5 VERIFICATION RESULTS

The overall goals of the verification task were to (1) verify that the values reported by each IOU in the Final Fourth Quarter CPUC Reports matched the program tracking databases, and (2) determine if the measures rebated and tracked in the program tracking system were in fact installed by the customer. Five separate activities were conducted:

Measure Verification. The number of units reported as being rebated through the program in the Final Fourth Quarter CPUC workbook were compared to the program tracking systems for each IOU to make sure the quantities matched.

HTR Verification. The percent of participants that received incentives in HTR segments (based on geographic location and business size) as reported in the Final Fourth Quarter CPUC Report narrative were reviewed to see if they matched the program tracking systems.

IOU Inspection Procedures and Results. The processes used by the IOUs for conducting their own inspections on measure installations were reviewed, along with their inspection tracking databases. In particular, the sample that was inspected by the IOUs was analyzed to ensure that the sample covered a representative number of measures.

Phone Verification. 662 telephone surveys were conducted with participants to verify that the rebated equipment was installed and matched the program tracking system.

On Site Verification. In addition, 100 on-site verification audits across 56 measure categories were conducted to verify the equipment that was installed and rebated under the Express program.

The results of these activities are discussed below.

Measure Verification

Exhibit 2-14 below summarized the findings of the measure accomplishments verification task. Presented are the number of units by measure type (1) found in the program tracking database for each IOU and (2) reported by each IOU in their Final Fourth Quarter CPUC workbook in the Program Activities Worksheet, Table – A, column S. All values matched very well between the database and reported number.

Exhibit 2-14
Comparison of Measure Accomplishments, by Measure Type and IOU
Tracking Database versus Final Fourth Quarter Report

Measure Category	SCE		SCG		PG&E		SDG&E	
	Database	Reported	Database	Reported	Database	Reported	Database	Reported
Agriculture	1,054	1,054	7,078,391	7,078,391	84,215	84,215	600,596	600,596
Food Processing	55	55	6,266	6,266	2,864	2,864	2	2
HVAC - A/Cs	6,731	6,731			4,659	4,659	2,002	2,026
HVAC - Other	931,324	931,324	1,116	1,116	1,732,845	1,732,845	242,753	242,906
Lighting - CFL	347,794	347,794			214,053	214,053	115,912	115,912
Lighting - Other	9,620	9,620			9,292	9,292	1,104	1,104
Lighting - T8/T5, Elec Bal, Delamp	372,635	372,635			218,604	218,604	59,284	59,284
Motors	123	123			32	32	13	13
Refrigeration	1,104	1,106			6,279	6,279	1,304	1,304
Water Heating			372,094	372,094	52,990	52,990	17,552	17,552
Total	1,670,439	1,670,442	7,457,867	7,457,867	2,325,833	2,325,833	1,040,522	1,040,699
Percent Difference		0.00%		0.00%		0.00%		-0.02%

HTR Verification

Using the definitions provided by the IOUs, we determined if a given participant fell into the rural and/or very small business HTR segments. Customers in rural zip codes were considered rural HTR. Customers with demand <20 kW and/or less than 10 employees were considered very small HTR. We calculated the number of accounts that received incentives in either of the HTR segments. We then compared the percent of the total applications that were classified HTR to the final CPUC report narrative, to determine if the values matched.

Exhibit 2-15 below summarizes the findings of the HTR accomplishments verification task. Presented are the percentages of participants that received incentives in HTR segments (based on geographic location and/or business size) that were (1) reported by each IOU as the program goal (2) found in their program tracking database and (3) reported by each IOU in their Final Fourth Quarter CPUC narrative. The numbers reported by all four IOUs matched well with the program tracking databases. All IOUs reached their HTR goals.

Exhibit 2-15
Comparison of HTR Goal and Accomplishment, by IOU
Tracking Database versus Final Fourth Quarter Report

Hard-to-Reach	SCE	SCG	PG&E	SDG&E
Goal	47%	42%	41%	56%
Database	60%	55%	68%	56%
Reported	58%	55%	69%	56%

Inspection Database Analysis

The Express program managers from each IOU were interviewed about their inspection process. Each IOUs inspection database was reviewed to confirm their inspection process, and to ensure that inspections covered a representative set of measures.

SCE's process is to randomly select 20% of participating sites for inspection. Applications with rebates of $2,000 or more were treated as mandatory inspections. Applications with rebates under $2,000 are selected randomly on an ongoing basis, maintaining the 20% requirement throughout the program year. In addition, performance issues prompted SCE to inspect 100% of some vendors' jobs. Field inspections are recorded in the program tracking system. Most are spot inspections. Problems include having no access to a site (especially in motels), finding key contacts for the site, and discovering that some or none of the fixtures were installed. Adjustments are made when discrepancies are discovered. SCE works with the contractor and customer to resolve issues and rebate the full amount. However, SCE does not pay on partial installs. Even if half the lighting fixtures are in storage for spares, they short pay the rebate application.

SCE's inspection procedure was confirmed through an analysis of their inspection database. Overall, 22% of all applications were inspected, which corresponded to 30% of all items in the database. Because SCE inspects all of their large applications, inspected measures represented 70% of the total rebate dollars. Less than 10% of the measures inspected failed the inspection. A representative sample of measures was inspected among each technology group (CFL, T-8, other lighting, A/Cs, other HVAC, refrigeration, etc.), with SCE typically inspecting 20 to 50% of the items.

Since 2000 SDG&E has inspected 100% of all Express jobs. Unless the measures are installed in hotel rooms all of the measures are inspected. For the measures installed in hotel rooms the inspector will look at a random sample of the measures. If any measures from the random sample are missing, the inspector will look at all the measures to determine what exactly had been installed. SDG&E conducts 100% inspection because they have found that many applications, especially lighting jobs, have over counted the number of measures installed in the application. SDG&E claims that because they have such a small service territory, the cost of inspections are very low (only about $20/inspections). From their perspective, this allowed the cost to be worked into the budget and still be cost effective.

In 2003, SDG&E conducted over 500 inspections. Among these inspections, 4% of them failed the inspection. In some instances, the customer or vendor corrected the discrepancy between

the application and the inspection, and the job was reinspected and passed. In another 15%, the inspection found a different number of measures installed than was documented in the application, and the rebate was adjusted to reflect the measure quantity found during the inspection (referred to as partially passing the inspection). Approximately half of the inspections were related to CFL installations, resulting in 3% failures and 16% partially passing.

The process of inspecting 100% of the applications may appear to be excessive. However, as mentioned above, SDG&E claims that due to their small service territory, they are capable of conducting these inspections at only $20. The cost of all of their inspections at $20 each is less than the rebate dollars associated with the applications that failed inspection, not to mention those that only partially passed.[14] Therefore, for SDG&E, it likely is cost-effective for them to conduct 100% inspection.

PG&E conducts random inspections on 20% of applications, 100% inspections for any application over $2500 in rebates. If a problem arises with a vendor, PG&E inspects all of that vendor's work. This was confirmed through an analysis of PG&E's inspection database. Overall, approximately 24% of the applications submitted were inspected, which corresponded to 38% of all items in the database and 74% of the rebates paid. The large percentage of rebates paid being inspected is a result of PG&E conducting inspections on all applications with a rebate over $2500. By technology group (CFL, T-8, other lighting, A/Cs, other HVAC, agriculture, water heating and refrigeration), PG&E typically inspected 20 to 40% of the items. With respect to applications that failed their inspection, all but three measure groups had less than 7% of the applications fail. Of those with larger failure rates, 1 in 9 agriculture and 3 in 18 water heating applications failed.

The technology with the most significant failures for PG&E was CFLs, where 17% of the items failed. Inspections were performed on a total of 175,613 unique lamps, which corresponds to 74% of the number of lamps that actually *applied* for a rebate. Of the 175,613 lamps inspected, rebates were paid on 86%, or 150,299 CFLs. Most of the lamps (70%) that were not paid rebates were due to entire applications being rejected.

One concern may be that, due to the relatively high failure rate for CFLs, there is a risk that there are a number of installations that would have failed inspection had the program conducted a 100% inspection. However, because PG&E verifies all large projects (rebates greater than $2,500), this results in the majority of rebated CFLs having had an inspection. Of the lamps rebated, 71% were inspected. Therefore, the potential for poor installations is limited to only 29% of the lamps rebated and not inspected. As discussed above, of the lamps inspected, 86% were paid a rebate. Therefore, we might expect that 86% of the 29% of the lamps not inspected, would have likely passed their inspection had there been one. This implies that 4% of the CFLs rebated through the program (14% of 29%), may have failed inspections had the program conducted 100% inspections (this finding was confirmed by QC's on-site verification audits as discussed below). The program only inspected 24% of the applications. Therefore, if the program had quadrupled the number of inspections (to 100% inspection), it is likely that

[14] Twenty-five measures initially failed inspection and were corrected, and passed reinsepction. These 25 measures aggregated to a total of $22,783 in rebates, far exceeding the $20 spent each on 500 plus inspections.

only 4% more lamps rebated by the program would have failed inspection. This indicates that PG&E's inspection process is probably cost-effective.

For SCG, the inspection process changed between 2002 and 2003, and SCG added an additional component to their process. In April 2003 the SCG program management met with their regulatory department to discuss inspections and quality control. At that time SoCal utilized their Account Executives (assigned customers >50,000 therms) and Service Technicians (unassigned customers, < 50,000 therms) to inspect all their customer applications and hand deliver the rebates after installation. It was decided that in addition to these visits, an inspector would also inspect 5% of the Express jobs to add additional independent verification. Depending on what these inspections found, SCG reported that the 5% inspection rate could increase.

SCG Account Executives usually have an engineering background and have been tasked to meet the needs of their assigned customers. This can mean anything from answering billing questions, safety issues or promoting the rebate programs. They do inspections as a small part of their job. The SCG Service Technicians are trained in repairing and maintaining gas fired equipment. Their jobs consist of repair and maintenance of gas equipment in addition to inspecting rebated equipment. The inspectors are trained to identify if rebated equipment is installed and operational. Their entire focus is on inspections.

This process was confirmed through an analysis of SCG's inspection database that revealed 7% of all applications were inspected by an inspector. This represented 23 applications. Of these, only one inspection revealed any installation problems, which is an indication that the service technicians were doing a fairly thorough job.

However, the way in which supplemental inspections were conducted was not random. Because this revision to the inspection process for SCG was decided upon during the program year, budget was not initially set aside for the activity, which is the primary reason why only 5% were conducted. Inspections were conducted more chronologically, rather than randomly, with the earlier applications being more likely to have an inspection. Because of this, some of the measures that were introduced to the program later in the year, received no supplementary inspections. Unfortunately, two of these measures (greenhouse strip curtains and setback programmable thermostats) comprised nearly 50% of the applications, 40% of the rebate dollars, and 85% of the therm savings for SCG. Overall, only 2% of the therm savings was inspected. Not one of the 50 largest applications, with respect to therm savings, were inspected, and only 4 of the 100 largest applications were inspected.[15] The large majority of inspections were performed on water heating measures, which were the primary measures in PY2002.

Because SCG still inspected 100% of the applications with their service technicians (same as the PY2002 process), whose results were very consistent with the inspector's findings, there are not any major concerns regarding the integrity of the measures installed. Furthermore, QC performed 10 verification audits on SCG participant sites and verified all 10 installations. Overall, SCG's process appears to be cost-effective, in that it leverages off of their Account Executives and Service Technicians, and adds an extra layer of quality control by having an

[15] However, it is important to note that 3 of the largest 50 applications in terms of rebate amount, and 10 of the large 100 applications, were inspected. In total, 8% of the rebate dollars were inspected.

inspector visit 5%. In the future, SCG should consider a model more similar to PG&E, where all applications over a certain rebate dollar amount are inspected, and a random sample of the remaining are inspected. Furthermore, we agree with SCG's statement, that they should consider doing more than 5% inspections if those inspections reveal that the Account Executive and Service Technicians are missing problems with the installation/application. It should also be noted that for PY2004, SCG is using a process to select sites randomly.

Telephone Survey Measure Installation Verification

A survey was conducted to verify that the IOU's customers installed the measures specified in their program tracking database. The survey asked a sample of 662 participants if they recalled receiving a rebate for the measures recorded in the IOU's tracking database. Twenty-five respondents were unaware of their participation in the Express Efficiency Program, and 51 remembered participating in the program, but did not recall receiving a rebate (likely because many CFL participants sign their rebate over to the contractor performing the installation). Another 25 customers either refused to answer or did not know if they had participated in the Express Efficiency Program. The number of unaware respondents is typical of what QC has found in previous studies, and is usually attributed to staff turnover, or difficulty in identifying the correct employee to speak with.

Exhibit 2-16
Survey Results of Participants
In Response to the Rebated Measure In the Tracking Database

Did you Participate in the Express Efficiency Rebate Program in 2003?	CFL	HVAC	Lighting	Refrigeration/Other	Total
Yes, participated in Express Efficiency	304	46	113	75	538
Yes, participated in utility program, but don't recall the name	3				3
No, did not participate in Express Efficiency program	25				25
No, did not receive rebate, but did participate in program	45	1	4	1	51
Other	18	1	1		20
Refused	2		1		3
Don't know	20		1	1	22
Total	417	48	120	77	662

Participants were also asked if they had installed the equipment rebated through the Express Efficiency Program. Of 857 measures asked about in the survey, only seven measures were not verified by the respondents, as seen in Exhibit 2-17. An additional twelve respondents were unsure if the measure had been installed. Overall 98% of the measure installations asked about had been installed.

Exhibit 2-17
Survey Results of Participants
In Response to Installation of Rebated Measure

Was the Given Measure Installed Through the Express Efficiency Program?	CFL	HVAC	Lighting	Refrigeration/Other	Total
Yes	503	54	199	82	838
No	5		2		7
Other				1	1
Don't know	6		5		11
Total	514	54	206	83	857

In addition, CFL purchasers were asked specifically how many CFLs were installed and how many were placed in storage. As seen in Exhibit 2-18, most customers said all rebated CFLs were installed. However, 23% of CFL participants interviewed said some or all of the bulbs were placed in storage. Of those who knew how many bulbs were placed in storage, about 20% were placed in storage and 80% were installed. Overall about 97% of bulbs were installed, which is verified by QC's on-site verification audits as discussed below.

Exhibit 2-18
Survey Results of Participants
In Response to Number of CFLs Placed in Storage

Were any CFLs put in storage?	Units Rebated	Were installed	Percent Installed	N
All installed	46909	46909	100%	230
Some in storage/know how many	8245	6487	79%	60
Some in storage/don't know how many	1604	na		8
All in storage	29	0	0%	2
Don't know	770	na		8
Total	57557	53396	97%	308

On-Site Equipment Verification

On-site audits were also completed for a sample of 100 sites, covering 56 measure groups and 168 equipment installations. The equipment rebated through the Express Program was grouped into four measure categories (CFL, other lighting measures, HVAC, and refrigeration/other). Exhibit 2-19 shows the distribution of the 673,087[16] measures and 100 sites

[16] This includes a greenhouse heat curtain of 644,625 square feet, and multiple space heating boilers which are measured in mbtuh.

that were audited, and the status of the rebated measures broken out into the four measure categories.

One-hundred percent of the refrigeration/other and HVAC measures were found to be installed and operational at the 17 sites sampled from the tracking database. Ninety-four percent of the lighting measures other than CFLs were found installed and operational. Of the remaining 6 percent, 2 percent had failed, 1 percent was kept in storage, and 3 percent could not be verified as received by the customer.

Among CFL installations, 88 percent were found to be installed and operational. Six percent had failed, 1 percent had been removed, and 2 percent were kept in storage. The two percent found to be in storage is validated by both the telephone survey results discussed above, where customers estimated about 3 percent of their CFLs were in storage; and the vendor interviews, discussed in Chapter 5, who claimed they left and extra 2.4% of CFLs behind to replace future burn outs. Similar to other lighting and previous results, 3 percent of the CFLs could not be verified as received by the customer. Three percent validates the analysis presented earlier on PG&E's inspection database, which estimated that four percent of the CFLs would likely have failed an inspection.

Exhibit 2-19
Results of On-Site Audits
Status of Rebated Measures

Rebated Measure	Number of Sites	Measure Quantity	Equipment Status																	
			Sites						Measure Quantity						Percent of Measure Quantity					
			All Measures Verified																	
			All Equipment Received by Customer	All Equip Installed and Operational	Some Equipment Failed	Some Equipment Removed	Some Equipment Kept in Storage	Some Equipment Not Received	Equipment Received by Customer	Equipment Installed and Operational	Equipment Failed	Equipment Removed	Equipment Kept in Storage	Equipment Never Received	Equipment Received by Customer	Equipment Installed and Operational	Equipment Failed	Equipment Removed	Equipment Kept in Storage	Equipment Never Received
CFL	61	9,043	49	17	28	3	11	12	8,768	7,996	514	78	180	275	97%	88%	6%	1%	2%	3%
HVAC	8	8,222	8	8	-	-	-	-	8,222	8,222	-	-	-	-	100%	100%	0%	0%	0%	0%
Other Lighting	38	8,197	34	13	19	-	4	4	7,942	7,725	140	-	77	255	97%	94%	2%	0%	1%	3%
Refrig/Other	9	647,623	9	9	-	-	-	-	647,623	647,623	-	-	-	-	100%	100%	0%	0%	0%	0%
Total Known	100	673,085	85	36	44	3	14	15	672,555	671,566	654	78	257	530	100%	100%	0%	0%	0%	0%

Of greatest interest among the on-site audit results is the percentage of equipment that was never received by the customer. Equipment failures and removals are typically accounted for in a measure's effective useful life (EUL), which measures the point at which 50% of the measures are still in place and operable. With respect to measures kept in storage, although they may not provide savings in the immediate term, it is likely that the measures will eventually be used and save energy. So for measures kept in storage the net present value of the measure life savings is slightly diminished. Equipment never received, however is not captured by the EUL, and provides no future potential for savings. In Section 2.7, the percentage of equipment never received is used to adjust the ex ante energy savings claim to provide a more accurate representation of the energy savings likely achieved by the 2003 Express Efficiency Program. Exhibit 2-20 summarizes the percentage of equipment never received by the customer, along with the corresponding 90% confidence interval.

Exhibit 2-20
Results of On-Site Audits
Equipment Never Received by Participant with 90% Confidence Intervals

Rebated Measure	Number of Sites	Measure Quantity	Equipment Received by Customer	Percent of Equipment NOT Received by Customer		
				Mean	90% Conf. Int. Upper Bound	90% Conf. Int. Lower Bound
CFL	61	9,043	8,768	3.0%	4.0%	2.1%
HVAC	8	8,222	8,222	0.0%	-	-
Other Lighting	38	8,197	7,942	3.1%	4.1%	2.1%
Refrig/Other	9	647,623	647,623	0.0%	-	-

2.6 CFL OPERATING HOUR AND EFFECTIVE USEFUL LIFE ASSESSMENT

The increased penetration of compact fluorescent bulbs (CFLs) in the Express Efficiency Program – as well as changes in the technology and its application – called for a revamping of outdated assumptions regarding measure life and hours of operation for this measure. A key portion of the evaluation was dedicated to this task, of which a general summary is presented in brief in this section. A detailed discussion of all research activities, methodology, and results can be found in Appendix H.

Primary data collected from lighting loggers at 60 sites, 60 site audits, and 360 telephone surveys were used to develop weekday, Saturday, and Sunday lighting schedules for ten segments based on five business types and two customer sizes (demand). Program tracking data provided counts of CFL installations by segment to aggregate the segment-level schedules to a single, program-level estimate of annual hours of operation. The assessment produced a program-level estimate of 2,709 annual hours of operation, broken down by day type in Exhibit 2-21.

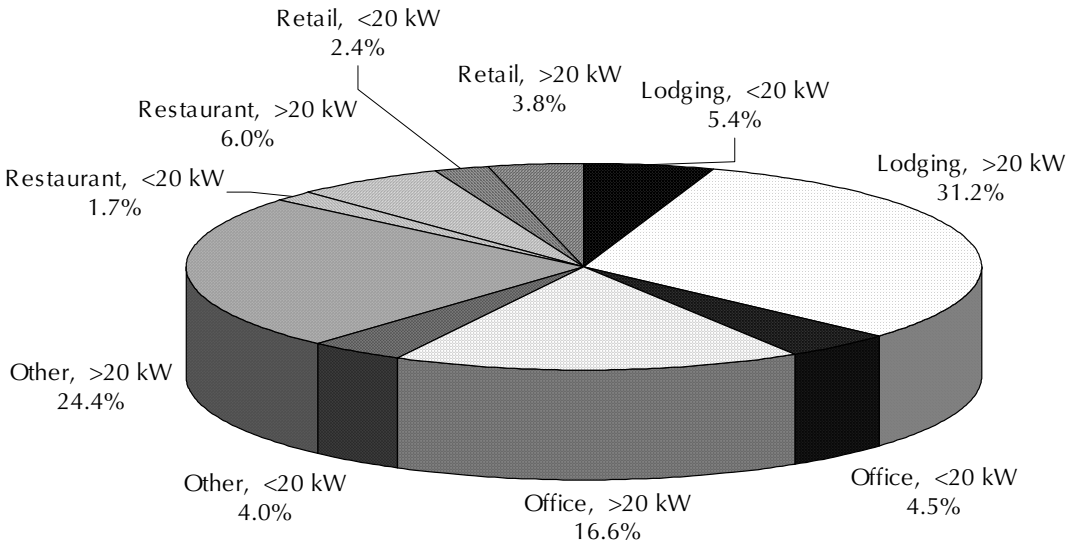
Exhibit 2-21
Annual Hours of Operation by Type of Day
For CFLs Installed through the 2003 Express Efficiency Program

Day Type	Total	Daily Average
Weekday	1,941	7.6
Saturday	373	7.2
Sunday	396	7.1
Total	2,709	7.4

The estimates of annual hours of operation seen in Exhibit 2-21 were based on aggregation of segment-level lighting schedules driven by the installation of CFLs in the program population. It is important to note that the purpose of this study, the sample sizes, and overall methodology were all intended to produce a single estimate of annual hours of operation for CFLs installed through the 2003 Express Efficiency program; segment-level results which were developed as intermediate results to increase the overall accuracy of the final program-wide result are not intended for use other than to estimate than the final, program-wide figure.

Exhibit 2-22 presents the distribution of CFLs installed through the 2003 Express Efficiency program, which were used to weight the final operating hour results. As Exhibit 2-22 shows, the final estimate represents figures heavily influenced by the lodging segments (where CFLs were installed primarily in guest rooms, which has been a trend for the past 4 years).

Exhibit 2-22
CFL Installations as Percent by Segment
Installed through the 2003 Express Efficiency Program



Although we do not endorse segment-level results, and have emphasized that these results are representative of the 2003 Express Efficiency program, we expect that the results of this study may be used for program planning outside of Express Efficiency. Therefore, we have also developed an estimated operating schedule for all CFLs installed outside of the lodging segments. Because the lodging segments had significantly lower operating hours than the other segments, a program that does not target the lodging segment in a way that the Express Efficiency program has, would significantly underestimate its energy savings accomplishments. These alternative estimates are presented in Exhibit 2-23.

Exhibit 2-23
Observed and Stated Annual and Daily Average Hours by Type of Day [17]
For CFLs Installed through the 2003 Express Efficiency Program
-- Excluding Lodging --

Day Type	Stated Schedules		Observed Schedules	
	Total	Daily Average	Total	Daily Average
Weekday	4,011	15.8	2,601	10.1
Saturday	798	15.3	491	9.4
Sunday	868	15.5	519	9.3
Total	5,676	15.7	3,612	9.9

Exhibit 2-24 presents 90% confidence intervals for the annual estimates of hours of operation overall and excluding the lodging segments.

Exhibit 2-24
90% Confidence Intervals For Annual Hours of Operation
For CFLs Installed Through the 2003 Express Efficiency Program

Estimate	Sites	Average Annual Hours	Lower 90% CI	Upper 90% CI	Relative Precision
Overall	60	2,709	2,244	3,174	17%
Excluding Lodging	51	3,612	3,086	4,138	15%

A secondary objective of this study was to develop an estimate of the effective useful life for *integral* CFLs installed under the Express Efficiency Program. As part of the 60 on-sites conducted, the make and model of the CFLs installed was gathered. The data gathered allowed us to determine the manufacturer's rated lifetime for 71 unique site-CFL model combinations (some sites had more than one type of CFL installed). This corresponded to the installation of 8,538 integral CFLs. The average manufacturer's rated life among these integral CFLs was 7,962 hours. Based on the 2,709 annual hours of operation presented above in Exhibit 2-21, this would equate to an estimated effective useful life of nearly 3 years for integral CFLs. Although the Express Efficiency program rebates both integral and modular CFLs, the integral CFLs comprise the large majority of CFLs installed, approximately 95%.

[17] Observed schedules are based on lighting logger data; whereas stated schedules are based on customer self-reported data collected during the on-site visit.

2.7 ADJUSTED EX ANTE ENERGY SAVINGS CLAIMS

As discussed above, there are three key results from this evaluation that could be used to adjust the IOU's ex ante energy savings claims that would provide a more accurate representation of the energy savings actually achieved by the 2003 Express Efficiency program. These three adjustments include:

- Adjusting the kW and kWh energy savings for all lighting measures by the percentage of equipment that was estimated to not have been received by the participants, based on the results of the on-site verification audits.

- Adjusting the annual kWh energy savings for CFL measures based on the estimated annual hours of operation estimated in the CFL operating hour assessment.

- Adjusting the lifecycle kWh energy savings for CFL measures based on the estimated effective useful life

Exhibit 2-25 summarizes the results of these three key evaluation results, along with their respective 90% confidence intervals.

Exhibit 2-25
Summary of Key Evaluation Results
and Corresponding 90% Confidence Intervals

	On-site Verification Evaluation Result			CFL Operating Hour Evaluation Result			CFL EUL Evaluation Result		
Technology	90% CI Lower Bound	Mean	90% CI Upper Bound	90% CI Lower Bound	Mean	90% CI Upper Bound	90% CI Lower Bound	Mean	90% CI Upper Bound
CFL	0.96	0.97	0.98	2,244	2,709	3,174	3	3	4
Other Lighting	0.96	0.97	0.98						
Other Measures	1.00	1.00	1.00						

Exhibit 2-26 compares the evaluation results for the CFL operating hours and EUL with the current assumptions used by the IOUs in their ex ante energy savings claims. The ratio of these values (evaluation to ex ante) provides an adjustment factor that can then be used to scale the ex ante savings estimates to provide a more accurate representation of what the program actually saved. Note that the results of the on-site verification presented above can also be considered adjustment factors (as the ex ante values would all be one).

Exhibit 2-26
Summary of CFL Adjustment Factors for Operating Hours and EUL and Corresponding 90% Confidence Intervals

Utility	Technology	CFL Operating Hour Adjustment			CFL EUL Adjustment		
		Ex Ante	Evaluation	Adjustment	Ex Ante	Evaluation	Adjustment
PG&E							
	90% CI Lower Bound		2,244	50%		3	38%
	Mean	4,492	2,709	60%	8	3	38%
	90% CI Upper Bound		3,174	71%		4	50%
SCE							
	90% CI Lower Bound		2,244	62%		3	38%
	Mean	3,617	2,709	75%	8	3	38%
	90% CI Upper Bound		3,174	88%		4	50%
SDG&E							
	90% CI Lower Bound		2,244	54%		3	38%
	Mean	4,150	2,709	65%	8	3	38%
	90% CI Upper Bound		3,174	76%		4	50%

The CFL hours of operation assessment found that the operating hours were about a third less than the ex ante assumptions. Furthermore, the EUL assessment found that the CFL measure life was only three years, compared to the eight year ex ante value. Please note that although there is some variation in the EUL estimate, the lower bound for the 90% confidence intervals is still three years, and the upper bound is four years. This is because the EUL is a function of the operating hours. At the upper (or lower) bound, the operating hours have increased (or decreased) along with the estimated measure life. But because the EUL is a ratio between the measure life and operating hours, the ratio does not vary significantly. Because the EUL is treated as an integer, the lower bound remained at three, while the upper bound increased to four years.

Exhibit 2-27 presents the first year ex ante net energy savings (kWh, Therm, and kW) claimed by the IOUs in the Final Fourth Quarterly reports, and illustrates how these savings values would change when adjusted by the results of the on-site verification and CFL operating hour assessment. Because the on-site verification results affects only lighting measures, and the operating hour assessment affects only the CFL measures, the therm savings and the savings associated with non-lighting measures do not change.

Exhibit 2-27
Effects of Applying Evaluation Adjustments
to Utility Reported First Year Ex Ante Savings Estimates
Adjusted for On-site Verification and CFL Annual Operating Hours

		Utility Reported First Year Ex Ante Net Savings Estimate			On-site Verification	Operating Hour	Evaluation Adjusted First Year Net Savings Estimate		
Utility	**Technology**	**kWh**	**Therm**	**kW**	**Adjustment**	**Adjustment**	**kWh**	**Therm**	**kW**
PG&E									
	CFL	67,936,668	-	10,804	0.97	0.60	39,724,781	-	10,476
	Other Lighting	21,925,656	-	4,503	0.97	1.00	21,243,572	-	4,363
	Other Measures	12,520,960	1,264,045	1,858	1.00	1.00	12,520,960	1,264,045	1,858
	Total	102,383,284	1,264,045	17,166			73,489,313	1,264,045	16,697
SCE									
	CFL	84,021,845	-	17,908	0.97	0.75	61,015,577	-	17,363
	Other Lighting	34,107,413	-	7,459	0.97	1.00	33,046,367	-	7,227
	Other Measures	5,044,182	-	1,810	1.00	1.00	5,044,182	-	1,810
	Total	123,173,440	-	27,177			99,106,126	-	26,400
SDG&E									
	CFL	27,329,144	-	5,334	0.97	0.65	17,297,166	-	5,172
	Other Lighting	7,644,132	-	1,408	0.97	1.00	7,406,331	-	1,364
	Other Measures	2,204,552	1,682,855	576	1.00	1.00	2,204,552	1,682,855	576
	Total	37,177,828	1,682,855	7,318			26,908,049	1,682,855	7,112
SCG									
	Total	4,390,166	4,511,578	-	1.00	1.00	4,390,166	4,511,578	-
STATEWIDE									
	CFL	179,287,658	-	34,046	0.97	0.68	118,037,524	-	33,011
	Other Lighting	63,677,201	-	13,371	0.97	1.00	61,696,270	-	12,955
	Other Measures	24,159,859	7,458,478	4,244	1.00	1.00	24,159,859	7,458,478	4,244
	Total	267,124,718	7,458,478	51,661			203,893,653	7,458,478	50,209

*Note: Statewide values for on-site verification and operating hour adjustments are weighted by Utility Reported kWh savings.

Exhibit 2-28 presents a direct comparison between the utility reported ex ante and the evaluation adjusted first year energy savings, including the ratio of the two values, along with the corresponding 90% confidence interval. As discussed, the most significant changes occurred among the CFL measures, followed by a slight adjustment to other lighting measures. Because CFLs were such a significant contributor to the overall program savings, the evaluation adjustment resulted in a reduction in kWh energy savings by 24%. Because demand is not affected by the CFL operating hour adjustment, kW savings were adjusted by only a few percent, due to the on-site verification results. Finally, therms were not affected at all, as only lighting measures were adjusted.

Exhibit 2-28
Comparison of Utility Reported and Evaluation Adjusted
First Year Savings Estimates
Adjusted for On-site Verification and CFL Annual Operating Hours
and Corresponding 90% Confidence Intervals

Utility	Utility Reported Ex Ante First Year Savings	Evaluation Adjusted First Year Savings	Adjusted as Percent of Reported		
			90% CI Lower Bound	Mean	90% CI Lower Bound
PG&E					
Energy Savings, kWh	102,383,284	73,489,313	0.65	72%	79%
Demand Reduction, kW	17,166	16,697	96%	97%	98%
Therms Reduction	1,264,045	1,264,045	100%	100%	100%
SCE					
Energy Savings, kWh	123,173,440	99,106,126	71%	80%	90%
Demand Reduction, kW	27,177	26,400	96%	97%	98%
Therms Reduction					
SDG&E					
Energy Savings, kWh	37,177,828	26,908,049	64%	72%	81%
Demand Reduction, kW	7,318	7,112	96%	97%	98%
Therms Reduction	1,682,855	1,682,855	100%	100%	100%
SCG					
Energy Savings, kWh	4,390,166	4,390,166	100%	100%	100%
Demand Reduction, kW					
Therms Reduction	4,511,578	4,511,578	100%	100%	100%
Statewide					
Energy Savings, kWh	267,124,718	203,893,653	68%	76%	85%
Demand Reduction, kW	51,661	50,209	96%	97%	98%
Therms Reduction	7,458,478	7,458,478	100%	100%	100%

Exhibit 2-29 presents the lifecycle ex ante net energy savings (kWh and Therm) claimed by the IOUs in the Final Fourth Quarterly reports, and illustrates how these savings values would change when adjusted by the results of the on-site verification, CFL operating hour assessment, and the CFL EUL assessment. Again, these adjustments only affect lighting measures, and primarily CFLs due to the operating hour and EUL assessment. Because the operating hour and EUL adjustments are so significant (particularly the EUL adjustment), the overall adjustment to CFLs is a reduction in lifecycle kWh savings by 75% (therefore, the adjusted estimated savings is less than one-quarter of the ex ante savings estimate).

Exhibit 2-29
Effects of Applying Evaluation Adjustments
to Utility Reported Lifecycle Ex Ante Savings Estimates
Adjusted for On-site Verification, CFL Annual Operating Hours & CFL EUL

Utility	Technology	Utility Reported Lifecycle Ex Ante Net Savings Estimate kWh	Therm	On-site Verification Adjustment	Operating Hour Adjustment	Effective Useful Life Adjustment	Evaluation Adjusted Lifecycle Net Savings Estimate kWh	Therm
PG&E								
	CFL	555,767,363	0	0.97	0.60	38%	121,865,725	-
	Other Lighting	329,862,770	0	0.97	1.00	1.00	319,601,088	-
	Other Measures	141,952,541	14,132,433	1.00	1.00	1.00	141,952,541	14,132,433
	Total	1,027,582,674	14,132,433				583,419,354	14,132,433
SCE								
	CFL	672,174,763	-	0.97	0.75	38%	183,046,731	-
	Other Lighting	516,194,699	-	0.97	1.00	1.00	500,136,428	-
	Other Measures	76,036,870	-	1.00	1.00	1.00	76,036,870	-
	Total	1,264,406,332	-				759,220,029	-
SDG&E								
	CFL	218,633,155	-	0.97	0.65	38%	51,891,498	-
	Other Lighting	121,967,504	-	0.97	1.00	1.00	118,173,224	-
	Other Measures	23,855,421	23,031,733	1.00	1.00	1.00	23,855,421	23,031,733
	Total	364,456,081	23,031,733				193,920,144	23,031,733
SCG								
	Total	48,286,740	38,613,819	1.00	1.00	1.00	48,286,740	38,613,819
STATEWIDE								
	CFL	1,446,575,282	-	0.97	0.68	0.38	356,803,954	-
	Other Lighting	968,024,973	-	0.97	1.00	1.00	937,910,740	-
	Other Measures	290,131,572	75,777,985	1.00	1.00	1.00	290,131,572	75,777,985
	Total	2,704,731,827	75,777,985				1,584,846,266	75,777,985

*Note: Statewide values for on-site verification and operating hour adjustments are weighted by Utility Reported kWh savings.

Exhibit 2-30 presents a direct comparison between the utility reported ex ante and the evaluation adjusted lifecycle energy savings, including the ratio of the two values, along with the corresponding 90% confidence interval. As discussed, the most significant changes occurred among the CFL measures, followed by a slight adjustment to other lighting measures. Because CFLs were such a significant contributor to the overall program lifecycle savings, the evaluation adjustment resulted in a reduction in lifecycle kWh energy savings by 41%. Therms were not affected at all, as only lighting measures were adjusted.

Exhibit 2-30
Comparison of Utility Reported and Evaluation Adjusted
Lifecycle Savings Estimates
Adjusted for On-site Verification, CFL Annual Operating Hours & CFL EUL
and Corresponding 90% Confidence Intervals

Utility	Utility Reported Ex Ante Lifecycle Savings	Evaluation Adjusted Lifecycle Savings	Adjusted as Percent of Reported		
			90% CI Lower Bound	Mean	90% CI Lower Bound
PG&E					
Energy Savings, kWh	1,027,582,674	583,419,354	54%	57%	64%
Therms Reduction	14,132,433	14,132,433	100%	100%	100%
SCE					
Energy Savings, kWh	1,264,406,332	759,220,029	57%	60%	69%
Therms Reduction					
SDG&E					
Energy Savings, kWh	364,456,081	193,920,144	50%	53%	62%
Therms Reduction	23,031,733	23,031,733	100%	100%	100%
SCG					
Energy Savings, kWh	48,286,740	48,286,740	100%	100%	100%
Therms Reduction	38,613,819	38,613,819	100%	100%	100%
Statewide					
Energy Savings, kWh	2,704,731,828	1,584,846,266	56%	59%	67%
Therms Reduction	75,777,985	75,777,985	100%	100%	100%

The primary purpose for adjusting the ex ante energy savings was to provide a more accurate estimate of the energy savings likely achieved by the 2003 Express Efficiency program. However, some of these evaluation findings should also be considered for use in future program planning. Below is our recommendation for how these results should be considered for future use:

- **Verification results** – We do not recommend using the 3% adjustment on CFLs and other lighting measures, as this is a program-year specific result. However, the IOUs could consider using their inspection databases to estimate the percentage of equipment that was rebated but never received by the customers, for those applications that did not received an inspection. As shown above, using PG&E's inspection data, we estimated that PG&E would have had approximately a 4% reduction in CFLs installed overall, if they had conducted 100% inspections.

- **Annual CFL kWh energy savings** – we do recommend adjusting the CFL kWh energy savings, utilizing the results of the annual hours of operation assessment. We recommend that the DEER team work with Quantum Consulting on how best to utilize this data to develop revised deemed savings estimates in DEER for CFLs.

- **Effective Useful Life for CFLs** – we do recommend that the EUL for CFLs be revised. Ultimately, we feel that a measure life study be conducted for CFLs. This evaluation has laid the groundwork for that study by developing a retention panel based on over 300 telephone surveys and data from 60 on-site audits. We recommend that CFLs be divided into two measure categories, integral and modular. If not, integral assumptions should be used for the measure, as the vast majority of CFLs installed are integral. Furthermore, the EUL for modular are based on the ballast (not lamp), which assumes that customer will replace the lamp upon burnout (which is not always the case). Until a measure life study is conducted for CFLs, we recommend that the EUL for integral CFLs be based on a measure life of 7,962 hours. Therefore, the EUL should be calculated as a function of the annual hours of operation assumed (EUL = 7,962 divided by annual hours of operation).

3. PROCESS ASSESSMENT

This process evaluation reviews and assesses the implementation-related aspects of the Express Efficiency program:

- **Sources of awareness**: examines sources of awareness, discusses influence of contractor and IOU representative, analyzes HTR awareness, and compares 2002 and 2003 programs.
- **Participation drivers**: compares influence of various drivers on participants' decisions to purchase equipment.
- **Participant satisfaction**: assesses customer satisfaction on various dimensions.
- **Application process**: discusses who filled out the application, awareness of online applications, and preference for application submission.
- **Reservation process**: looks at impact of reservation option and satisfaction with the process.

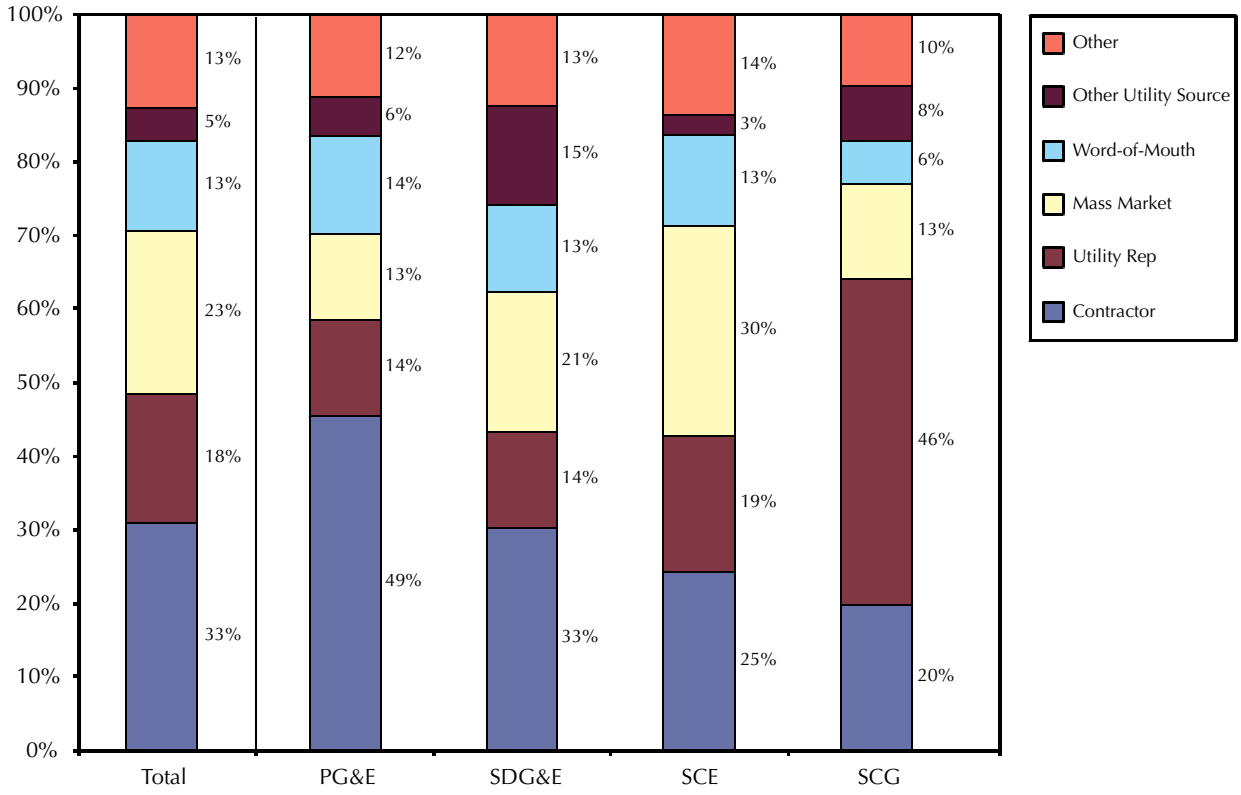
To assess these process issues, we rely on participant survey data, program staff interviews, and lighting vendor interviews (Chapter 5).

3.1 SOURCES OF AWARENESS[18]

Vendors were the biggest source of awareness for participants, as Exhibit 3-1 shows. One in three participants in the 2003 Express program learned about the program through a vendor. Nearly one in four participants (23%) learned about Express through mass media (i.e. IOU brochures in the mail, bill inserts, television, radio, and newspapers). The third greatest source of awareness was IOU representatives (18%). Some participants learned about the program through word-of-mouth (13%).

[18] Appendix Exhibit C-1 (Sources of Awareness)

Exhibit 3-1
Sources of Program Awareness
Participants



*Note: Values sum to more than 100% because multiple responses were allowed

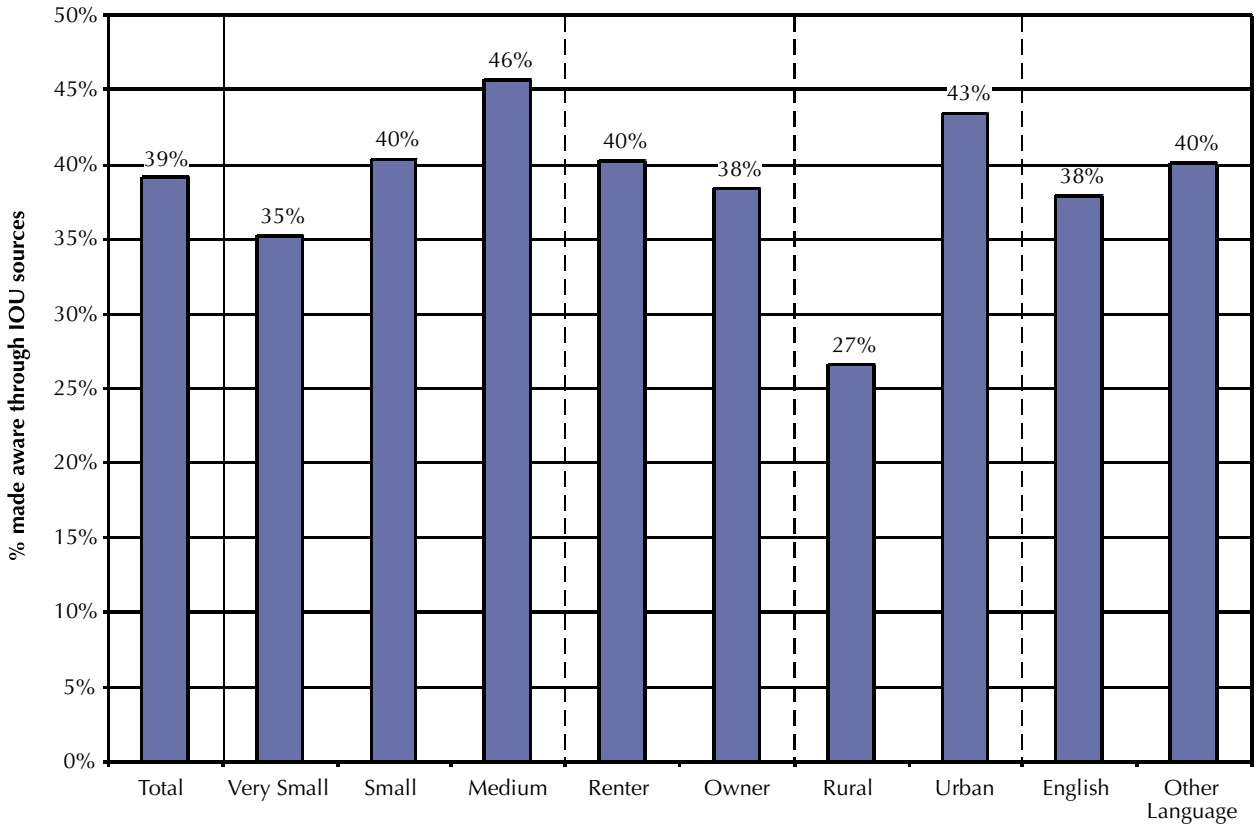
Person to person contact is an important motivator in getting customers to participate in an energy efficiency program. Sixty-three percent of participants said their vendor was "very important" in deciding what equipment to install.[19] PG&E relies heavily on vendors to promote Express to customers, and nearly one in two PG&E participants (49%) learned about the program through a vendor. SCG relies heavily on IOU representatives to tell customers about Express. While many participants in the SCG territory became aware of Express through representatives (46%), the other utilities' customers are not being reached as thoroughly. Forty-two percent said an IOU representative discussed Express Efficiency rebates with them.[20] However, vendors and IOU representatives target different customer segments. Vendors focus more on offices, retail, restaurants, and grocery stores, while IOU representatives focus more on institutional and industrial customers. Retail participants especially tended to become aware through vendors. By contrast, vendors had an impact on institutional customers' awareness far less than participants overall, whereas utility representatives played a large role in making institutions aware of Express.

[19] Appendix Exhibit C-2 (Vendor Importance)

[20] Appendix Exhibit C-3 (Utility Representative Outreach)

The CPUC directed utilities to reach hard-to-reach customers (i.e. small customers (<20kW), renters, rural customers, and customers who speak languages other than English). Exhibit 3-2 shows IOU sources of awareness (i.e. IOU representatives, brochures, bill inserts, IOU websites, audit, magazines, and seminars) across various segments.

Exhibit 3-2
IOU Sources of Awareness
Hard to Reach Segments

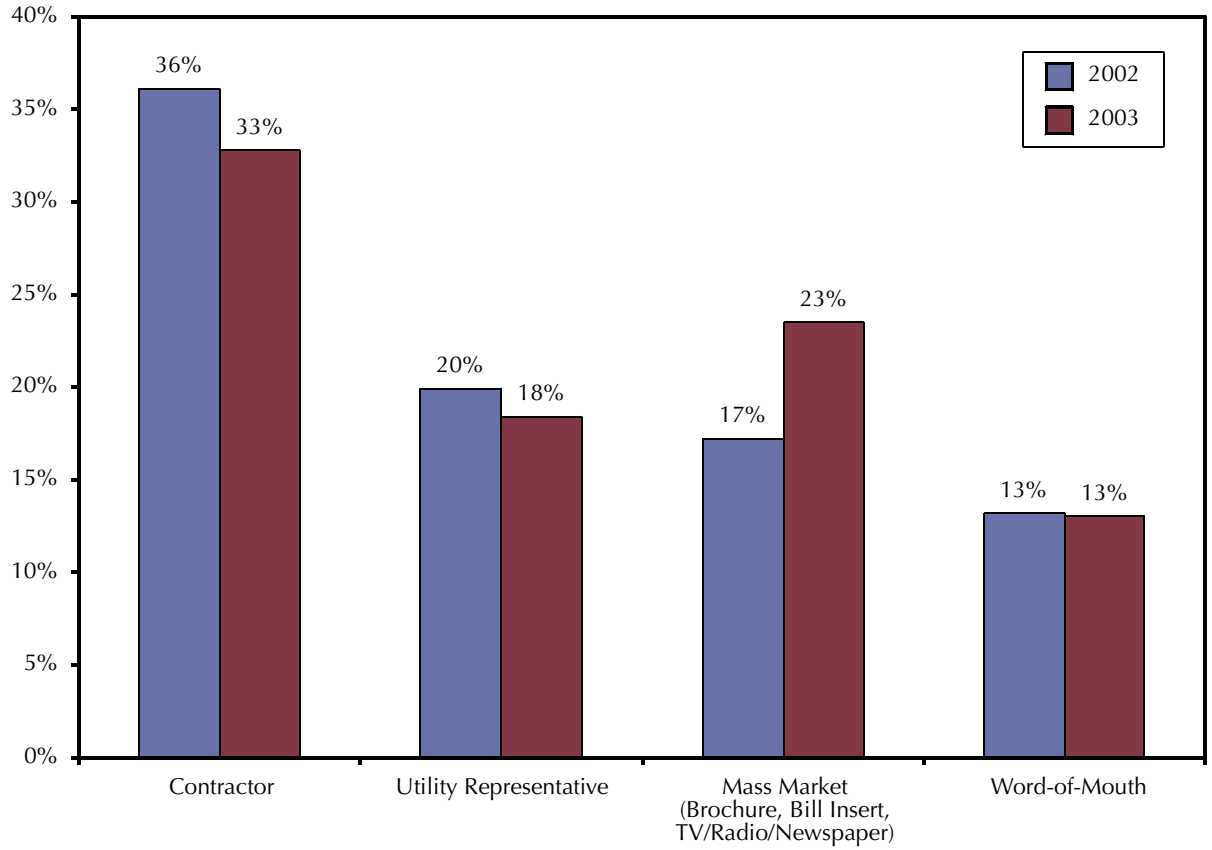


On the whole, the utilities have done a fairly good job of reaching HTR customers. A smaller percentage of very small customers (<20kW) became aware of the program through the IOU (36%) compared to the participant population (39%), but this difference is relatively small. The utilities have done a good job in targeting renters (40%) and other language speakers (40%), compared with 39% of participants surveyed. However, there is room for improvement in reaching rural customers; only 27% of rural customers became aware of Express through the IOU compared to 43% of urban customers.

As shown in Exhibit 3-3, sources of program awareness did not change much between 2002 and 2003, with one exception: more participants became aware of Express through mass media in 2003. SDG&E and SCE continued to market the program through bill inserts and mailers in 2003, according to their program managers. These IOUs' emphasis on mass media is reflected in the way that SDG&E and SCE participants learned about the program. More of their customers became aware of the program through mass media in 2003 than 2002. For example, in 2002 only 15% of SDG&E customers became aware of Express through mass media, but this

number increased to 21% in 2003. PG&E, on the other hand, shifted its marketing mix from mass media to vendors and IOU representatives. Vendors in PG&E's territory made more customers aware of Express in 2003 than 2002 (49% versus 45%). SCG relies on IOU representatives to do most of the program marketing; nearly one in two SCG participants became aware of the program through an IOU representative.

Exhibit 3-3
Major Sources of Awareness
2002 versus 2003



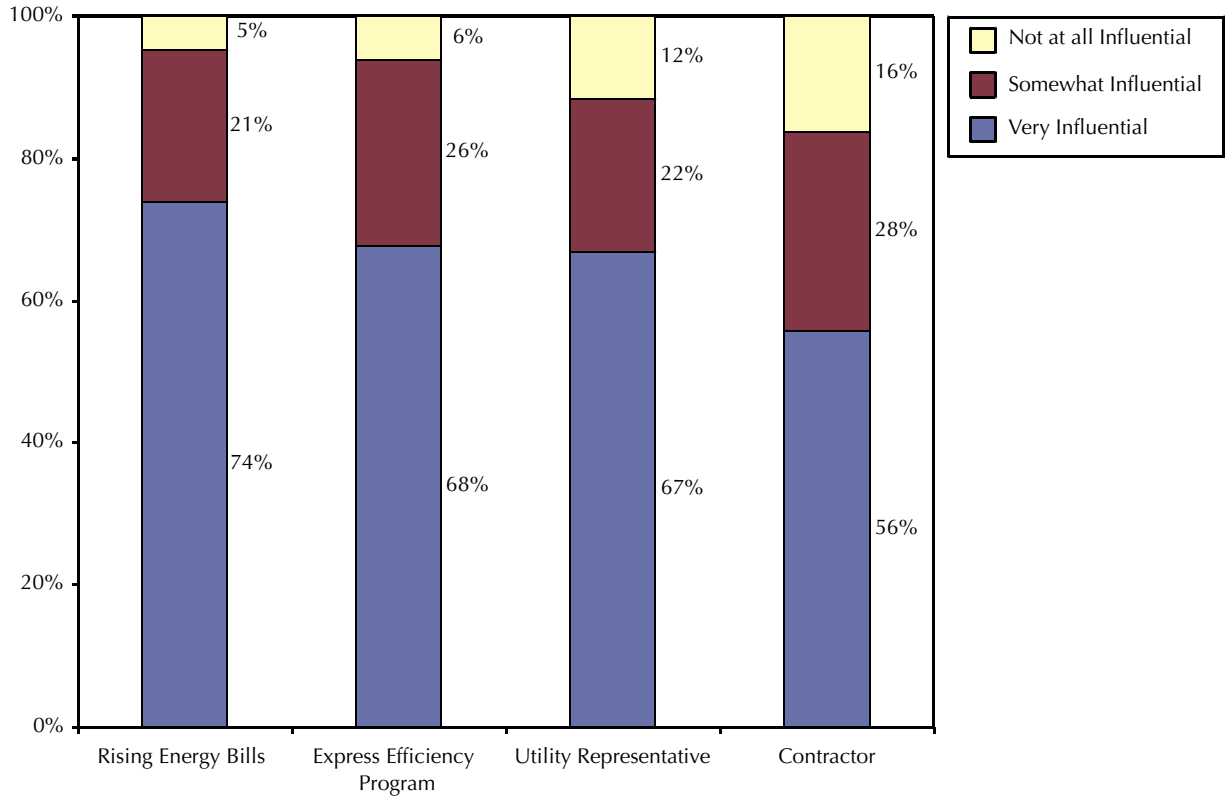
3.2 PARTICIPATION DRIVERS

Influential Factors[21]

Exhibit 3-4 shows the influence of four factors on participants' decisions to purchase equipment for program year 2003. As in 2002, participants pointed to rising energy bills as the most influential factor in their decisions to purchase rebated equipment. The overall Express Efficiency program and IOU representatives were also quite influential both years. In 2002, contractors were more influential than representatives, but PY03 participants ranked contractors as the least influential factor in their decision to purchase energy efficient equipment.

[21] Appendix Exhibits C-4 through C-7 (Influence on Purchase)

Exhibit 3-4
Influential Factors on Decision to Purchase Equipment



Reasons for Participation[22]

Concern over rising energy bills is also demonstrated in reasons that customers gave for participating in Express. The majority of customers mentioned "Saving money on energy bills" (59%) as the reason they participated in the program. One in three (35%) participants mentioned the rebate as a major reason for participating. Nearly a third (32%) of participants indicated that they participated in order to "Save energy". Many customers also said they were interested in acquiring the latest technology (17%) or replacing old or broken equipment (11%). Some segments gave certain responses more frequently than others. Key trends include:

- CFL Purchasers
  - Participants who purchased CFLs (28%) were less interested in obtaining a rebate than participants who purchased other pieces of equipment (43%)
  - Participants who purchased CFLs (40%) were more likely to give "save energy" as a reason for participation than customers who purchased other pieces of equipment (22%)

[22] Appendix Exhibit C-8 (Reasons for Participation)

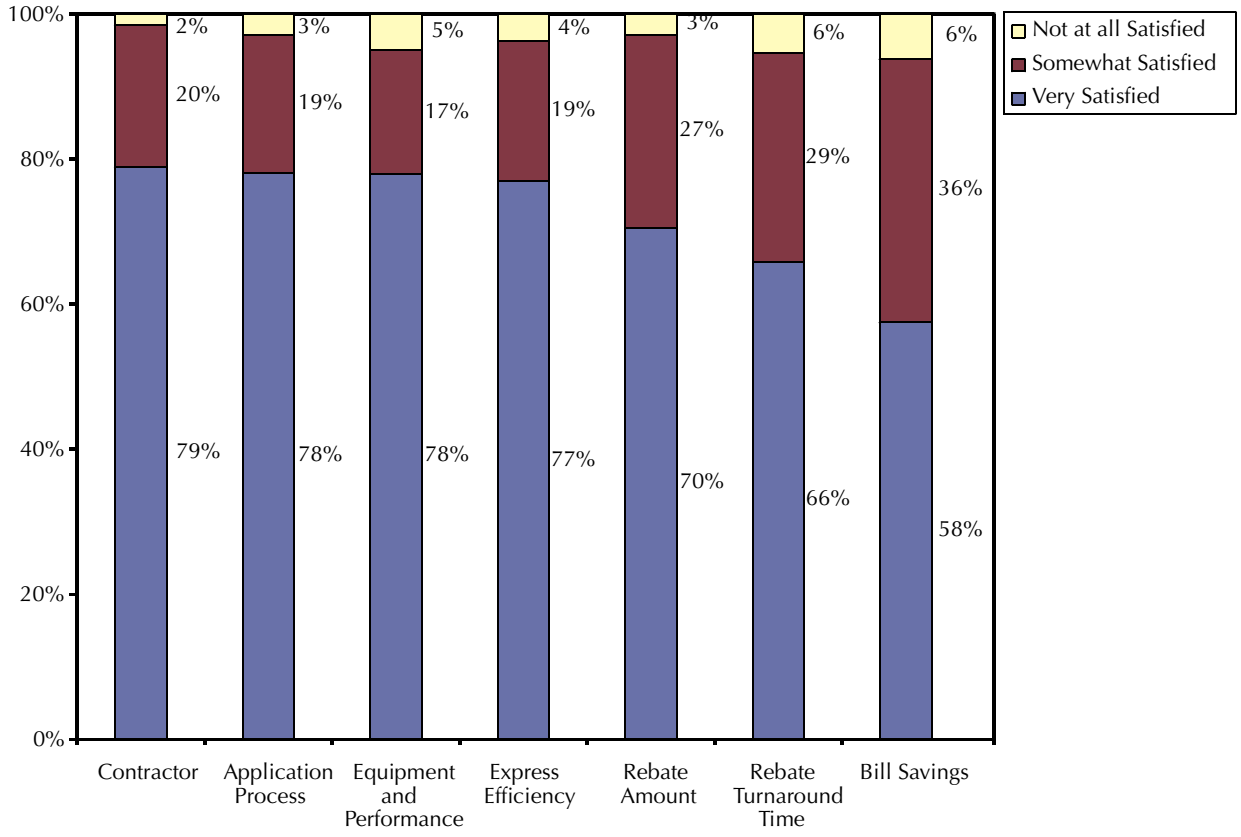
- SCG Participants
  - SCG participants (64%) were more likely to cite "obtaining a rebate" than SDG&E and SCE customers (31% each)
  - More SCG participants (30%) cited "replacing old or broken equipment" as a reason for participating than other IOU participants
  - These differences among SCG participants may be a result of the type of equipment that is installed (lighting is not a rebated measure for SCG).
- Rural Participants
  - Rural participants (45%) were more interested in obtaining a rebate than urban participants (32%)

3.3 PARTICIPANT SATISFACTION[23]

Participant satisfaction with several aspects of the Express Efficiency program is shown in Exhibit 3-5.

[23] Appendix Exhibits C-9 through C-15 (Satisfaction)

Exhibit 3-5
Participant Satisfaction



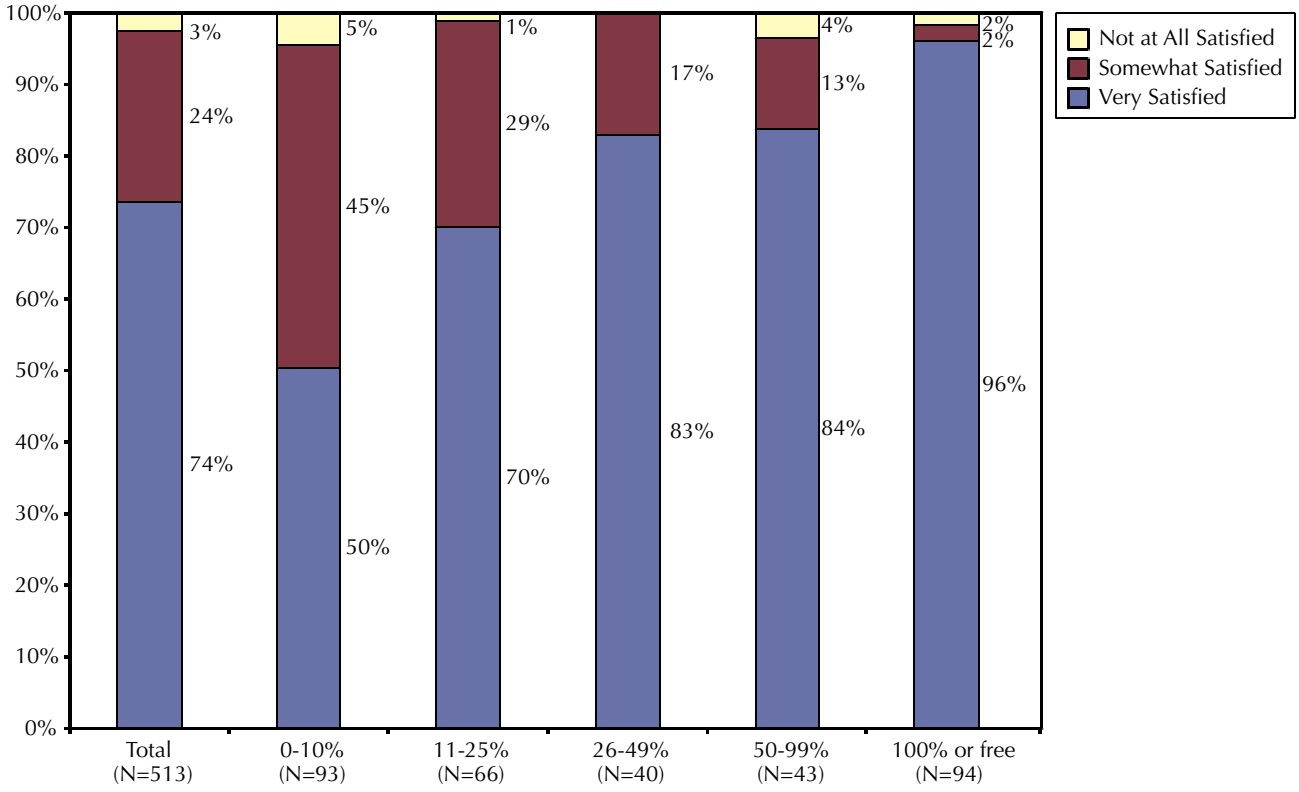
Satisfaction with contractor continues to be the category with the highest rating. Satisfaction levels also remained high for the overall Express program and performance of equipment purchased. However there was a marked improvement in participant satisfaction with the application process; in 2002 the application process received the second lowest satisfaction rating, and in 2003 it was the second highest. Bill savings again received the lowest satisfaction rating, as in 2002. Since rising energy bills drove most participants' decisions to purchase rebated equipment, they probably hoped to see a bigger effect on their energy bill as a result of installing the energy efficient measure. It is interesting to note that larger customers and SCG customers were more satisfied than other customers in almost every category, which may be a result of greater involvement from a utility representative (large customers typically have an account executive, and SCG heavily promotes their program through their service technicians).

Participants were a bit less satisfied with rebate amount and rebate turnaround time. Customers who purchased CFLs, HVAC, agriculture and food service equipment were more satisfied with the rebate amount than customers who purchased other lighting, water heating and refrigeration equipment.[24] As would be expected, customers that had a higher percentage of the total equipment cost covered by the rebate were more satisfied with the rebate amount.

[24] Appendix Exhibit C-30 (Rebate Satisfaction)

Exhibit 3-6 below shows satisfaction with rebate amount across various segments detailing percent of equipment cost covered by the rebate. These segments vary from the rebate covering very little of the cost, to covering 100% of the cost of equipment.

Exhibit 3-6
Satisfaction with Rebate Amount Versus Percent of Cost Covered by Rebate



3.4 APPLICATION PROCESS

Sixty-one percent of participants filled out the rebate application themselves. Contractors filled out applications on behalf of 27% of surveyed participants (5% gave other responses and 6% did not know). Likewise, 64% of rebate checks went directly to the customer, while 20% were disbursed to the contractor (5% gave other answers and 12% did not know). Contractors tended to fill out applications for larger customers, but these customers tended to receive rebate checks directly. Owners were more likely than renters to both fill out the application (66% versus 58%) and receive the rebate check themselves (71% vs. 57%). CFL purchasers were less likely to fill out the application themselves (55%) than customers who bought other equipment (69%), and their rebate check was more likely to go to the contractor (30% versus 8%).[25]

[25] Appendix Exhibit C-22 (Filled out Application); Appendix Exhibit C-23 (Rebate Check).

Online Applications

Express Efficiency applications are available on all four IOU websites. However, only 39% of participants were aware that applications were available online, which is even lower than in 2002 when 44% of participants were aware. Large customers (60%), owners (48%), institutional customers (61%), and SCG customers (51%) were very aware of online applications, whereas SCE customers (35%), very small customers (34%) and CFL purchasers (28%) were not very aware of online Express applications, perhaps because contractors tend to fill out applications for them.[26]

Sixteen percent of participants downloaded a rebate application off of the IOU website. Large customers (46%), owners (46%), and rural customers (46%) were more likely to download an application, whereas restaurants and grocery stores (28%) were less likely to download an application.[27]

Submitting Rebate Applications in the Mail versus Electronically[28]

Approximately one in two (54%) customers prefer to submit their rebate application in the mail, while 27% prefer an electronic application process (18% have no preference). Large customers (38%), offices (45%), and PG&E customers (41%) – the customers that tended to download their applications -- prefer to submit their applications online. By contrast, SCE customers (18%) and CFL purchasers (18%) were much less interested in submitting an application electronically.

3.5 RESERVATION PROCESS[29]

All four IOUs had a reservation process (i.e. customers called to reserve funds before applying for a rebate), although participants were not required to use this process. One in four (27%) participants reserved funds. Large customers (46%), offices (36%), restaurants and grocery stores (36%), SCG customers (49%), and non-CFL purchasers (43%) tended to reserve funds. Also, many customers might not have mentioned reserving funds because their contractor reserved funds for them. Customers installing measures other than CFL (i.e. greenhouse curtains, refrigeration, T-8s) are doing larger projects with more expensive equipment, and therefore may want to ensure rebates are available by reserving funds in advance. Of participants that made a reservation, three in four (72%) were very satisfied with the experience.[30] Dissatisfied customers mentioned that the process was too long, the customer never received a rebate, and the reservation was lost.[31]

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[26] Appendix Exhibit C-24 (Online Application)

[27] Appendix Exhibit C-25 (Download Application)

[28] Appendix Exhibit C-26 (Submission Preference)

[29] Appendix Exhibit C-27 (Reservation)

[30] Appendix Exhibit C-28 (Reservation Satisfaction)

[31] Appendix Exhibit C-29 (Reservation Dissatisfaction)

4. PROGRAM INFLUENCE

Is the Express Efficiency program getting customers to move towards energy efficient measures? This chapter uses participant survey responses to consider the important issue of program effects and rebate influence. The first section examines program effects, including intentions to purchase future energy-efficient products. The second section examines the influence of the rebate, including how sensitive participants are to rebate levels.

4.1 PROGRAM EFFECTS

Condition of Equipment

We looked at the condition of participants' equipment to get a sense of whether participants are replacing their equipment early, before it fails. Accelerated adoption is one way to measure the effect of an energy efficiency program. Exhibit 4-1 shows operating condition of equipment for the major types of measures rebated by Express – CFLs, lighting, HVAC, water heating, refrigeration, agriculture and food service.

Exhibit 4-1
Condition of Existing Equipment[32]

EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED								
A140. What was the operating condition of the equipment before you replaced it?	Total (%)	CFL (%)	Lighting (%)	HVAC (%)	Water Heating (%)	Refrigeration (%)	Agriculture (%)	Food Service (%)
Old equipment was working fine	69	86	79	23	56	41	7	12
Old equipment had problems	26	13	26	75	23	29	52	21
Old equipment had failed	3	1	2	0	15	29	11	0
New equipment did not replace anything	7	2	11	6	4	23	29	68
N	542	308	113	46	42	14	12	7

* Note: Results are weighted by energy savings.

Participants tended to replace air conditioning (75%), refrigeration (59%) and agricultural (64%) equipment when it malfunctioned or failed. Interestingly, 68% of food service participants are buying new equipment. By contrast, 86% of CFLs and 79% of lighting systems were working fine when they were replaced, suggesting the program may be accelerating adoption of lighting measures.

[32] Appendix Exhibit D-1 (Operating Condition of Existing Equipment) presents operating condition by size, HTR segment, business type and IOU.

Intentions

Customers' future purchase intentions are another way of assessing the effect of a program on participants. Does participation encourage customers to purchase energy efficient products in the future?

Eighty-seven percent of participants indicated that they are more likely to install energy-efficient products as a result of their experience with the program.[33] Participants were most interested in purchasing lighting (44%), HVAC (21%), and refrigeration equipment (11%) in the future.[34]

Most (84%) CFL participants indicated that they will replace their CFLs with CFLs when they burn out or fail.[35] 64% indicated that the program was "very influential" in getting them to use CFLs in the future.[36] Participants that said the program was not influential reported that they would have used CFLs anyway (23), knew CFLs were more efficient and had used them before (22%), or found that their CFLs did not work right (15%).[37] Importantly, 86% indicated they would still install CFLs without a rebate.[38]

Program Effects

Nearly a third of participants (31%) indicated that they bought more energy-efficient equipment as a result their experience with the program.[39] Exhibit 4-2 shows what types of energy-efficient equipment participants said they purchased as a result of participating in Express. Lighting was the most popular purchase (43%). There is a strong correlation between the type of rebated measure and what additional products customers purchased as a result of the program. For example, 63% of CFL participants went on to purchase additional lighting products, suggesting that their program experience led them to trust energy-efficient products and seek more.

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[33] Appendix Exhibit D-2 (Intent to Purchase Energy-Efficient Products in Future)

[34] Appendix Exhibit D-3 (Energy-Efficient Products that Participants Intend to Purchase)

[35] Appendix Exhibit D-4 (CFL Replacement). Institutional participants were the exception; less than half (46%) plan to replace their CFLs with CFLs.

[36] Appendix Exhibit D-5 (Influence of Program in Purchase of CFLs in Future)

[37] Appendix Exhibit D-6 (Reasons Why Program Did Not Influence Future Purchase)

[38] Appendix Exhibit D-7 (Intent to Purchase CFLs without Rebate)

[39] Appendix Exhibit D-8 (Purchased Energy-Efficient Products as Result of Program)

Exhibit 4-2
Energy Efficient Equipment Purchased as a Result of Express Participation

EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED								
PE60. What did you purchase?	Total (%)	CFL (%)	Lighting (%)	HVAC (%)	Water Heating (%)	Refrigeration (%)	Agriculture (%)	Food Service (%)
Lighting	43	63	68	12	1	26	0	0
Refrigeration	4	6	1	0	3	50	0	0
HVAC	13	14	6	21	0	26	0	0
Other	41	19	26	67	96	24	100	100
N	156	94	29	12	10	5	4	2

* Note: Results are weighted by energy savings.

4.2 INFLUENCE OF REBATE

We examined the timing of awareness – when customer become aware of the rebate in the course of his shopping experience – because customers that became aware of the rebate *after* deciding to purchase a product are less likely to be influenced by the program.

Overall, 59% of participants were aware of the rebate before purchasing equipment that qualified for the rebate. Exhibit 4-3 shows rebate awareness by measure. Most agricultural (82%), water heating (78%) and lighting (72%) participants were aware of the rebate before purchasing program-qualifying measures. By contrast, only 27% of food service participants were aware of the rebate before purchasing their equipment. People that are aware first are more likely to be influenced by the program than those that already made a decision to purchase before becoming aware of the rebate.

Exhibit 4-3
Timing of Rebate Awareness

EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED								
REB30. Were you aware of the rebate before or after you decided on purchasing the equipment that qualified for the rebate?	Total (%)	CFL (%)	Lighting (%)	HVAC (%)	Water Heating (%)	Refrigeration (%)	Agriculture (%)	Food Service (%)
Before	59	55	75	30	78	62	82	27
After	26	28	7	63	15	4	18	73
Same time	9	12	2	7	7	32	0	0
Refused/don't know	6	6	17	0	0	2	0	0
N	542	308	113	46	42	14	12	7

* Note: Results are weighted by energy savings.

Exhibit 4-4 shows what participants said they would have done if the rebate had not existed. Overall, only one-quarter of the participants (weighted by energy savings) claimed they would have purchased the same equipment at the same time, in the absence of the program. This finding is remarkably similar to previous results from PG&E's pre-1998 Commercial Energy Efficiency Incentive (CEEI) impact evaluations. In paid years 1996, 1997, and 1998, PG&E's CEEI Retrofit Express (the precursor to the Express Efficiency program) was found to have self-report free ridership rates that ranged from 25% to 37% for lighting technologies, and 39% to 56% for HVAC technologies.

Overall, an additional quarter of the customers claim they would have purchased the same equipment, but were influenced to accelerate their adoptions. Another quarter would have purchased standard equipment, and another quarter would have done nothing.

The measure with the strongest program influence is CFLs, where only 14% would have purchased the same equipment at the same time in the absence of the program. A third of CFL participants indicated they would have purchased standard light bulbs, and another 28% would not have purchased any lighting equipment. Other lighting measures are also strongly influenced, with 42% of the participants claiming they would not have made a purchase in the absence of the program.

Food service and HVAC participants were the least influenced, with 81% and 67% of the participants claiming they would have bought the same equipment at the same time, respectively. This finding suggests that rebates may not be needed for food service and HVAC. This is not surprising, as 75% of participants' HVAC equipment had failed, forcing an emergency replacement. Furthermore, only 4% of HVAC participants indicated they would have purchased standard equipment in the absence of the rebate.

Exhibit 4-4
Action in Absence of Rebate

EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED								
REB50. What equipment would you have purchased had the rebate not existed?	Total (%)	CFL (%)	Lighting (%)	HVAC (%)	Water Heating (%)	Refrigeration (%)	Agriculture (%)	Food Service (%)
Same energy efficient equipment now	26	14	28	68	47	54	9	81
Same energy efficient equipment later	24	23	18	25	8	2	63	1
Standard equipment	24	34	11	4	30	19	12	18
No equipment	26	28	42	2	15	24	16	0
N	509	290	104	43	41	13	11	7

* Note: Results are weighted by energy savings.

A significant difference between the Express Efficiency programs and the pre-1998 Retrofit Express programs is the HTR focus that the current programs have, and the eligibility requirement for accounts to be less than 500 kW. It appears that the program does have a stronger influence on the HTR customers, in particular the very small (<20 kW) and rural customers, as might be expected due to their first cost market barriers. Overall, only 15% of the

very small customers claim they would have purchased the same equipment in the absence of the program. Furthermore, 38% claim they would have purchased standard equipment, and another 17% would have not made any purchase. Similarly, urban customers are twice as likely (29%) to purchase the same thing at the same time than their rural counterparts (14%). Whether a business owns or leases its space makes little difference; owners are about as likely (25%) as renters (22%) to purchase the same thing at the same time in the absence of the program.[40] These results do suggest that free ridership may be lower for some HTR segments, such as very small and rural customers.

In addition, 50% of <20kW CFL and lighting participants indicated they would have bought standard equipment without the rebate, twice as many 20-100 kW customers.[41] In addition, rebates spurred some customers to adopt energy efficient measures earlier than they otherwise would have, especially CFLs.[42]

As shown above, about half of the customers claimed they would have purchased the same equipment, either now or in the future, in the absence of the program. For those customers that claim they would have either purchased standard equipment or nothing at all in the absence of the program, we investigated how sensitive their participation decision was to the rebate level. Note that these are the customers where the program was most influential, as they claim they would not have purchased the same equipment without the rebate. Exhibit 4-5 considers how sensitive these participants are to rebate levels by asking, "If the rebate was half of the amount you received, what would you have done?"

Exhibit 4-5
Purchase Decision with Rebate Cut in Half
Among Customers that would not have Purchased the Same Equipment
in the Absence of the Program

EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED								
REB63. If the rebate was half of the amount you received, what would you have done?	Total (%)	CFL (%)	Lighting (%)	HVAC (%)	Water Heating (%)	Refrigeration (%)	Agriculture (%)	Food Service (%)
Bought the same high efficiency equipment	21	16	20	78	20	57	36	35
Bought the same equipment but at a later date	31	27	58	14	4	7	44	0
Bought standard or less efficient equipment	14	14	3	3	48	36	0	65
Bought no equipment	35	43	19	5	27	0	20	0
N	228	135	50	16	13	8	4	2

* Note: Results are weighted by energy savings.

[40] Appendix Exhibit D-9.

[41] Appendix Exhibit D-10 (CFL Purchase in Absence of Rebate).

[42] Appendix Exhibit D-11 (Timing of Purchase in Absence of Rebate) and Appendix Exhibit D-12 (Years Participant Would have Waited in Absence of Rebate).

Exhibit 4-5 indicates that only 21% of the participants that are most sensitive to the rebate, would have purchased the same equipment at the same time had the rebate been reduced by half. This implies that 79% of the participants that were most influenced by the program, would not have participated if the rebate were reduced in half. More specifically, if the rebate were reduced in half, overall participation would likely have been reduced by 40%, as follows :

- 50% of all participants claim they would have purchased the same equipment, either now or later. [From Exhibit 4-4, 26% that would have purchased the same equipment now, plus 24% that would have purchased the same equipment later]

- 10% of all participants would not have purchased the same equipment in the absence of the program, but would still participate if rebates were reduced by half. [From Exhibit 4-4, 24% that would have purchased the standard equipment, plus 26% that would have purchased no equipment, multiplied by the 21% from Exhibit 4-5 that would have bought the same equipment if the rebate was reduced by half]

- 40% of all participants would not have purchased the same equipment in the absence of the program, and likely would not have participated if rebates were reduced by half. [From Exhibit 4-4, 24% that would have purchased the standard equipment, plus 26% that would have purchased no equipment, multiplied by the 79% from Exhibit 4-5 that would *not* have bought the same equipment now if the rebate was reduced by half]

Therefore, reducing the rebate results in a program that likely would have a much higher rate of free ridership. This is because the customers that are most likely to choose not to participate with lower rebates are also the customers that are most likely influenced by the rebate.

The participants that are most sensitive to the rebate level, are CFL participants. Among those influenced by the program, only 16% would have purchased the same equipment at the same time if rebates were reduced by half, and 43% would have made no purchase at all. Interestingly, CFL participants are also the customers that received rebates that covered the highest percentage of their installation cost. As shown in Exhibit 4-6, 60% of CFL participants received rebates that covered their entire installation cost.

To some extent this validates the claim by many third party vendors that target HTR customers, which is that HTR customers required direct installation programs that cover a large percentage of their installation cost in order to participate. As shown here, reducing the rebate below 50% of the installation cost is likely to result in a drop out of many customers that otherwise would have participated.

However, this finding is also somewhat contradictory to the vendor findings that CFL rebates can be reduced. As shown above, 60% of CFL participants are receiving their installation at no charge. Perhaps reducing the rebates by 50% may be too extreme. However, there may be some middle ground where rebates can be effectively reduced without losing potential participants. As discussed in Chapter 6, seven local programs that offer direct install styled programs were analyzed. These programs had a lot of success reaching HTR customers, and on average paid 70% of the installation cost.

Exhibit 4-6
Cost Covered by Rebate

EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED								
PE63. What percent of the cost did the rebate cover?	Total (%)	CFL (%)	Lighting (%)	HVAC (%)	Water Heating (%)	Refrigeration (%)	Agriculture (%)	Food Service (%)
0-10 percent	16	5	34	13	63	74	8	100
11-25 percent	19	14	42	8	29	15	22	0
26-49 percent	14	5	14	79	8	0	0	0
50-74 percent	7	4	7	0	0	12	35	0
75-99 percent	11	13	2	0	0	0	35	0
100 percent or free	33	60	0	0	0	0	0	0
N	336	183	65	27	35	9	11	6

* Note: Results are weighted by energy savings.

5. LIGHTING VENDOR ASSESSMENT

This chapter presents results of interviews with 30 lighting vendors, program managers and participant surveys on the role that vendors played in their equipment purchases. The seven sections of this chapter address the following:

- **IOU outreach to vendors** (5.1) describes IOU marketing efforts to vendors, based on interviews with program managers.
- **Participant survey results** (5.2) presents findings on vendor outreach to customers and their influence on customer decisions, based on interviews with Express participants.
- **Vendor interview results** (5.3) presents business profiles of vendors interviewed, characterizes their participation in Express, and their CFL installation practices
- **Lighting rebates** (5.4) presents vendor opinions on the Express rebate structure, their expectations about seasonal promotions, and the influence of the rebate on CFL and T-8 sales and delamping efforts.
- **Energy Efficiency program competition** (5.5) offers a qualitative assessment the effect of third party programs on Express participation.
- **Process Issues** (5.6) examines the application and reservation process and offers vendor suggestions for program enhancements.
- **Summary of Findings** (5.7) recaps the main findings on the role of vendors in the Express Efficiency program.

5.1 IOU OUTREACH TO VENDORS

Program managers recognize that vendor participation is critical to success, as the majority of customers sign rebates over to vendors. Vendors are the backbone of the Express Efficiency program, and stimulating vendor involvement can be a challenge.

The 2002 Express Efficiency program evaluation found that vendors are more effective at generating participation than mass marketing (Myers et al, 2004). Historically, utilities rely on the mass market to inform customers about the program (brochures in the mail, bill inserts, television, radio, newspaper ads). While mass marketing certainly made many people aware of Express—55% of the population told us they learned about the program this way—far fewer *participants* learned of the program through utility marketing. While the IOUs made a lot of people aware of the program, it was vendors who were better able to seal the deal. One-on-one contact really helps—whether it's a vendor, a friend or a utility representative.

In light of these findings, Express Efficiency program managers have shifted their marketing mix somewhat in 2003.

PG&E. PG&E felt it was more important to spend their marketing dollars on vendors, not customers. PG&E chose not to use direct mail in 2003, citing cost and lack of response. PG&E instead relied on vendor outreach and account managers to promote the program.

Southern California Edison. SCE acknowledges that Express Efficiency is a direct sell program that relies on vendors. SCE relied more on email messages and updates to vendors in 2003. SCE felt that vendor kickoff meetings at the CTAC facility, where program staff review program requirements and applications, are especially valuable.

SDG&E. SDG&E echoed the importance of the kickoff meeting, and also mentioned that letters to vendors highlighting bigger rebates, sent in October 2003, were effective.

Southern California Gas. SCG leverages their service technicians to make customers aware of Express Efficiency. Also, SCG account executives are more actively promoting the program. SCG conducted limited outreach to vendors, but did target vendors that install greenhouse curtains in 2003.

5.2 CUSTOMER SURVEY FINDINGS

This section presents results from interviews with Express Efficiency participants about the role of their contractor.

5.2.1 Vendor Outreach

Thirty-three percent of customers first learned about the Express Efficiency program through a vendor.[43] As seen in Exhibit 5-1, this is more than any other mode of awareness, which shows that vendors were effective in making customers aware of the program.

[43] Appendix Exhibit E-1 (Source of Program Awareness)

Exhibit 5-1
Contractor Outreach by Size, Business Type and IOU

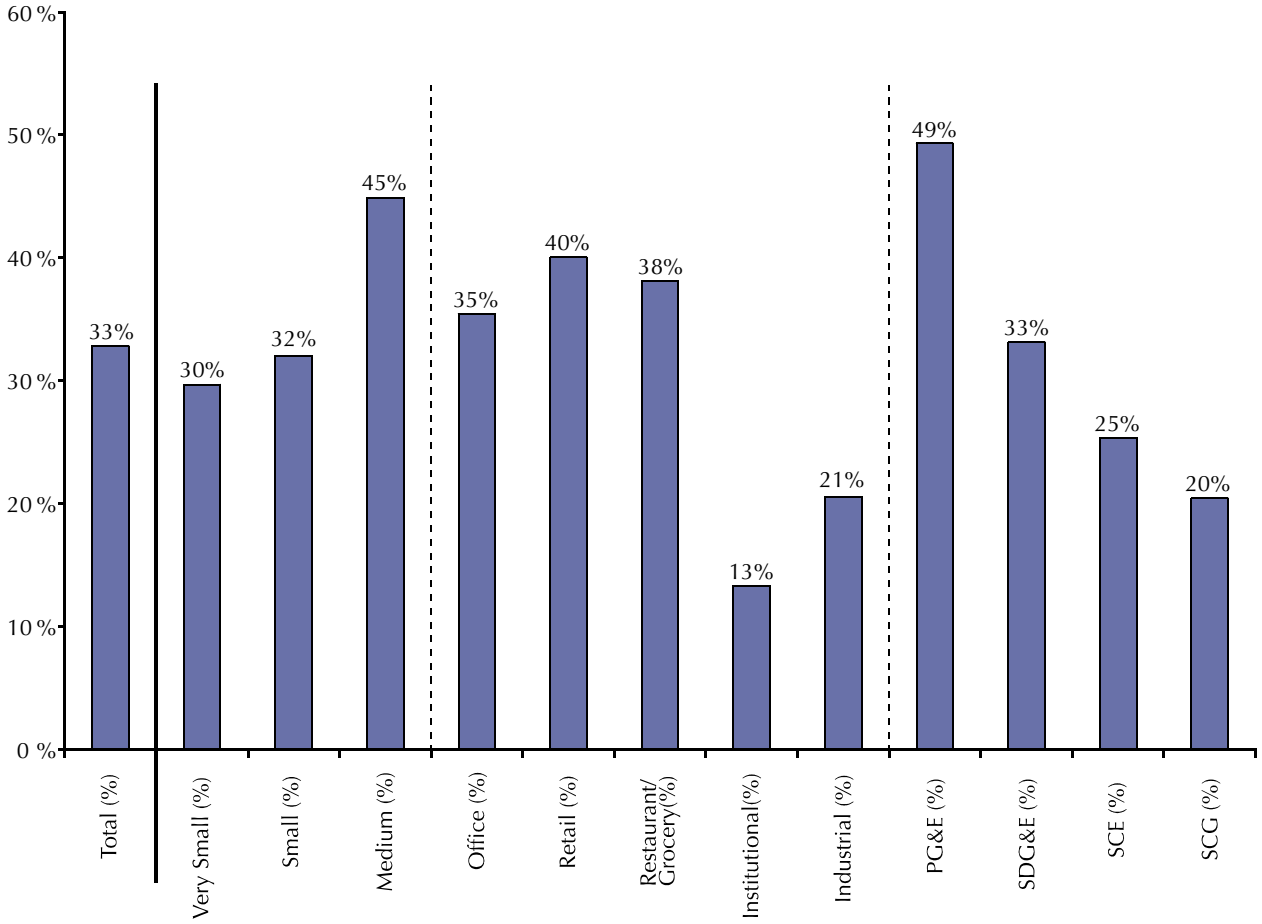

Exhibit 5-1 shows how vendor outreach varies across different customer segments. Larger customers (45%) were more likely to be approached by a vendor, which supports the idea that larger customers are easier to reach (Myers ACEEE 2004). Rural customers (42%) were more likely to have learned about the program through a vendor than urban customers (30%). Vendors are more likely to approach offices (35%), retail stores (40%), and restaurants (38%). A greater percent of PG&E customers (49%) learned about the program through a vendor than customers in other utilities.

5.2.2 Use of Vendor

Forty-seven percent of the participant population used a vendor to install their measure. Customer segments rely on contractors in different ways.[44]

[44] Appendix Exhibit E-2 (Contractor Installation)

- **Business size**. Larger customers were more likely to use a vendor than smaller ones. Very small customers (<20 kW) were most likely to do a project themselves.

- **Business Type**. Type of Business affects the extent to which a business relies on a contractor. For example, institutional (37%) and industrial (39%) customers did not heavily rely on vendors, probably because they tend to use in-house staff to maintain and replace equipment. By contrast, offices (60%) were more likely to hire vendors to install energy efficient products.

- **Measure Type**. Customers that installed CFLs (27%) were less likely to hire a vendor than customers who installed other measures (70%), which makes sense because CFLs are easy for a customer to install on their own.

- **IOU**. Customers in the SCE territory (37%) were less likely to hire a vendor than customers in the other utilities. SCE customers may have less need for a contractor because they tended to install more CFLs (68%) – a relatively simple technology to mount in a fixture – than participants in other territories.[45]

- **Rural versus urban**. Rural customers (57%) were more likely to learn of the program through a contractor than their urban counterparts (44%), and also more likely to use a vendor.

Sixty-two percent of the participant population who hired a vendor had not used that vendor before. Participant segments varied in how likely they were to rely on a contractor that was new to them.[46]

- **Measure Type**. Customers who installed CFLs (25%) were less likely to use a vendor they had used before than customers who installed other measures (43%). This may be a result of lighting vendors being more likely to market the program door to door. Furthermore, some lighting vendors are able to install CFLs at no additional cost above the incentive, so customers do not feel the need to shop around for a vendor.

- **IOU**. SCG customers (50%) are more likely than customers in other utilities to use a vendor they have used before. SCG customers may choose to rely on "tried-and-true" vendors because SCG's Express measures center on more customized equipment, such as food service equipment (SCG's Express program does not rebate CFLs, focusing instead on gas measures).

- **Hard to Reach**. Very small customers (73%) and renters (72%) were particularly likely to use a new vendor, suggesting that these customers are unlikely to have an established relationship and are open to trying new vendors. However, rural customers (50%) are less likely to use a new vendor than urban customers (68%), possibly due to a limited supply of vendors in rural areas.

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[45] Appendix Exhibit E-3 (CFL Purchase)

[46] Appendix Exhibit E-4 (New Contractor)

5.2.3 Vendor Influence

Sixty-three percent of the participant population who used a vendor said their vendor was very important in their decision to install energy efficient equipment. Contractor influence varies across different participant segments.[47]

- **Business Size**. 68% of very small customers believed their vendor was very important in their decision, suggesting that they trusted their vendors, even though most of these customers were using that particular vendor for the first time.[2] Likewise, 68% of medium-sized customers believed their vendor was very important in their decision perhaps because they tended to have an established relationship with their vendor.

- **Business Type**. A very high percentage of industrial (71%) and agricultural (99%) customers said their vendor input was very important. Since production processes are critical to these businesses, their participation likely depends on their perceptions of vendors' reliability (Small Industrial Report 2002). As a result, it is not surprising that industrial and agricultural participants rate the importance of their vendors very high.

- **Measure Type**. Similarly, many customers who purchased CFLs through a vendor might not have purchased CFLs at all if a vendor had not approached them. A high percentage of customers who purchased CFLs (70%) also said their vendor input was very important.

Overall, customers were very satisfied with their vendors. Seventy-nine percent were very satisfied and 20% were somewhat satisfied. Only 2% were not at all satisfied. The satisfaction of different participant segments varies.[48] Medium-sized customers (86%), business owners (82%), and rural customers (82%) were more satisfied with their vendors than other customer segments. These customers were also more likely to use a vendor they had used before, suggesting that customers were more satisfied with vendors with whom they have an established relationship. Institutional (94%), industrial (92%), and agricultural (92%) customers were also highly satisfied with their vendors, whom they tended to have used in the past. Customers who purchased CFLs (82%) were also more satisfied with their vendors than customers who purchased other measures (77%), perhaps because CFLs are easy to install. Contractors may encounter fewer problems installing CFLs than other measures. Poor quality work was the most common reason for dissatisfaction with a vendor.[49]

In short, vendors are important players in the Express market. One-third of participants learned about the program through a vendor. Almost half of all participants used a vendor to install the measure. In addition, most customers used a vendor they had never used before. Most claim that their vendor influenced their equipment specification and purchase decision. Nearly all were satisfied with their vendor.

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[47] Appendix Exhibit E-5 (Importance of Contractor Input)

[48] Appendix Exhibit E-6 (Contractor Satisfaction)

[49] Appendix Exhibit E-7 (Reasons for Dissatisfaction)

5.3 LIGHTING VENDOR INTERVIEW RESULTS

This section presents process-oriented results from interviews with 30 lighting vendors. The importance of vendors in moving the commercial market cannot be overemphasized, as small and medium customers rely on vendors to replace equipment in their businesses. We focused on lighting vendors because most of the program's energy savings accomplishments came from compact fluorescents and T-8s.

Our intent was to learn about participating lighting vendors' experience with the program, not to conduct supply-side baseline research. Previous research has characterized the commercial lighting market in California based on data from interviews with electrical vendors and distributors (1999 State-Level Small/Medium Nonresidential MA&E Study).

We interviewed vendors that participated in the 2003 Express Efficiency program. An integrated database of vendors that participated in the Express Efficiency program in 2003 served as the sample frame for these lighting vendor interviews.

5.3.1 Vendor Profile

This section profiles the 30 lighting vendor that we interviewed—what their businesses look like, how they participate in the program, and their CFL practices.

Firmographics. The 30 vendors interviewed varied greatly in size in terms of revenue and number of employees, but the typical profile is a multimillion-dollar vendor that sells energy efficient lighting products directly to end users.

- **Type of Business**. Respondents described themselves as electrical vendors (17%), lighting management companies (23%), energy service companies (23%) and lighting distributors (13%). Another 13% do provide lighting management, energy services and products, both supplying and installing lighting products. Rounding out the group was a parts broker and the "lodging industry's leading supplier of environmental products and programs."

- **Type of Market**. Nearly 90% of vendors' business focused on the commercial/industrial sector, focusing on retrofit projects. Most installed lighting products for end-users; a few sold to vendors.

- **Products**. Vendors sell an array of lighting products such as T-8/electronic ballasts, CFLs, reflectors, occupancy sensors, LEDs, exit signs, T-5 fixture conversions, HID controls. Vendors that sell CFLs are fairly evenly split among low (<1000 bulbs), medium (1000-10,000 bulbs) and high (>10,000).[50] Likewise, vendors that sell T-8 systems fall fairly evenly into low (<2500 bulbs), medium (2500-10,000 bulbs) and high (>10,000). Also, vendors that install T-8 systems indicated that 40% of their T-8 retrofits are super T-8s (generally about 10% more efficient that standard T-8s) .

[50] Overall sales volume is taken from two sources: IOU data on vendors' Express sales, and vendors' self-reported breakdowns of percent of business done inside and outside Express Efficiency.

- **Geographic territory**. 17 of the vendors interviewed were located in PG&E territory, seven in SCE service territory, and six in the San Diego area. Several did business statewide; others, nationally.

- **Revenue**. The average 2003 revenue was $4.9 million. Over half percent reported revenues of a million dollars or more. The smallest firm, an energy services company, reported $30,000.

- **Employees**. Two-thirds employed ten or less full-time employees. The two largest employed 10,000 or more workers.

5.3.2 Express Participation

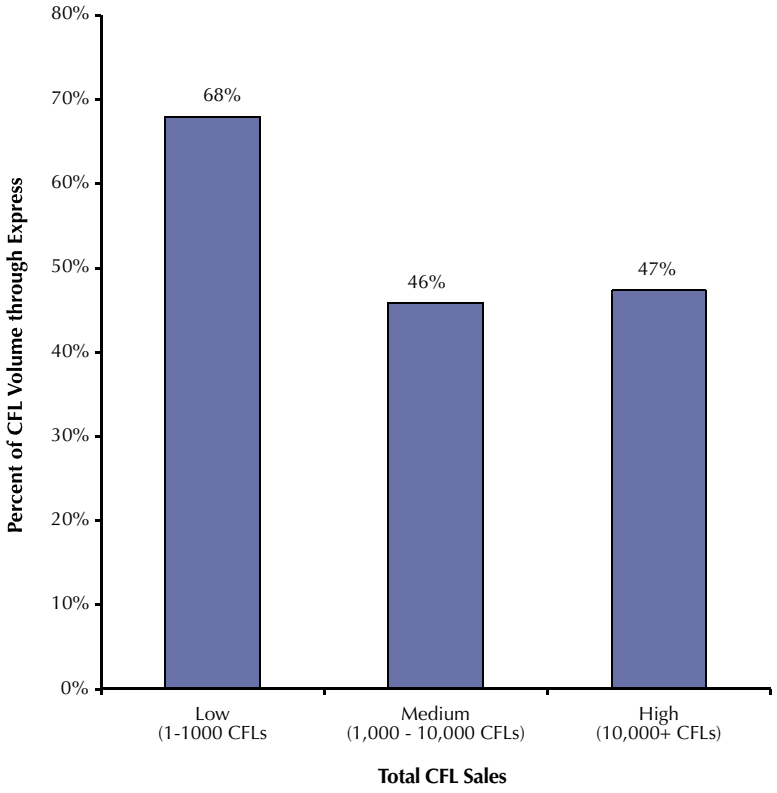
All vendors interviewed have participated in the Express Efficiency program.

Overall, vendors claimed to sell 47% of their CFLs and 22% of their T-8s through the Express program, suggesting that vendors and/or customers are far less responsive to the current T-8 rebate level.[51] The unweighted *median* is 50% of CFLs and 30% of T-8 sales are rebated through Express, which is consistent with the weighted sales data.

High volume CFL vendors (over 10,000 CFL lamps sold in 2003) do much more business through Express (47% of sales) than high volume T-8 vendors (18% of sales). The program encourages vendors to promote CFLs, as there appears to be a payoff to participating in the program for CFL vendors in particular. Exhibit 5-2 shows the Express CFL volume by vendor size.

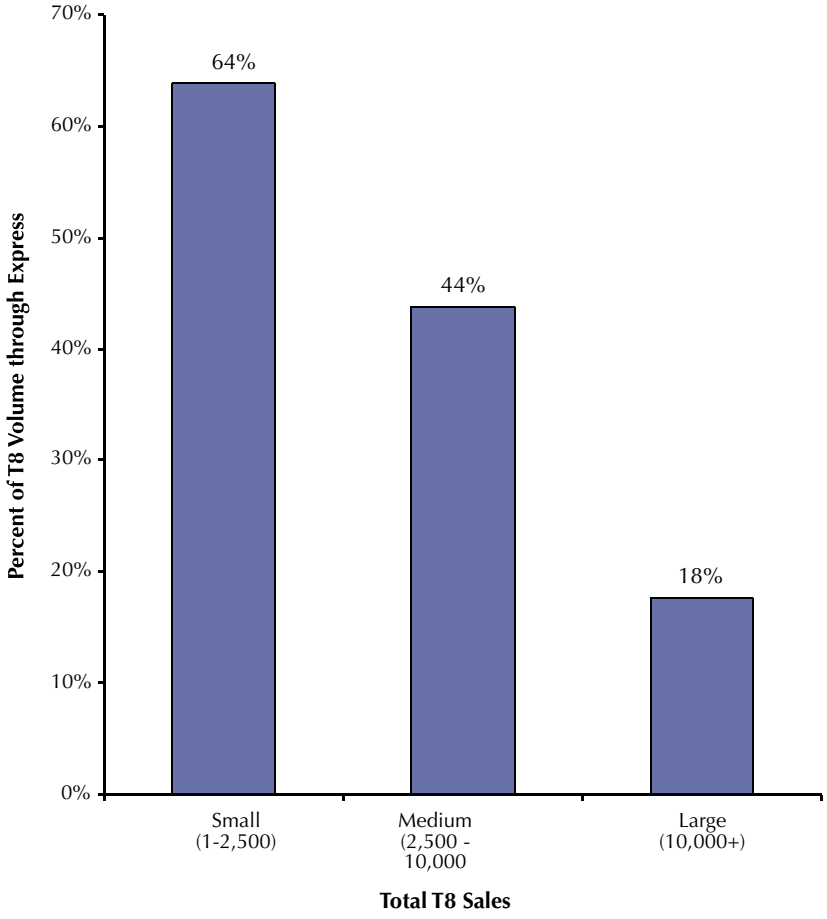
[51] Express sales are weighted by vendor size.

Exhibit 5-2
Express CFL Volume by Vendor Size



As mentioned, only 22% of vendors' T-8 sales are sold through the Express program, suggesting that T-8 rebate levels do not drive vendors to Express. This is most true for high-volume vendors (those selling 10,000 or more T-8 lamps and ballasts in 2003), who sell significantly fewer T-8 systems through the Express program than small vendors, as illustrated by Exhibit 5-3.

Exhibit 5-3
Express T-8 Volume by Vendor Size



5.3.3 CFL Installation Practices

In 2002, the Express program allowed Energy Star rated integral CFLs to be rebated through the program for the first time. The potential implication is that integral CFLs have a lot shorter life expectancy than the modular ballast. On average, 92% of the CFLs installed are integral (weighted by number of CFLs sold). The program is shifting away from modular to integral CFLs, a shift verified by our on-site inspections.

An additional concern with CFL installations is the potential for bulbs being rebated that are not installed, but instead left behind for certain reasons (e.g. as replacements for failures). The majority (59%) of CFL installers are telling us that they leave extra lamps. These vendors tend to leave roughly 2.4% extra lamps (i.e. 2.4% of total job size). This was confirmed by both the participant telephone interviews and the on-site verification audits, as discussed in Chapter 2, which found an extra 2 to 3% of the CFLs were left behind in storage.

A third concern is that the program doesn't require pre-installation inspections. The program eligibility requirements are that CFLs are installed to replace existing incandescent bulbs. On average, 11% of the CFLs installed by vendors replaced existing CFLs.[52]

5.4 LIGHTING REBATES

This section presents vendor opinions on the Express rebate structure, their expectations about seasonal promotions, the influence of the rebate on CFL and T-8 sales and delamping efforts, and examines delamping potential and practices.

5.4.1 Vendor Opinions on Rebate Structure

Vendor participation is a key factor in the success of the Express program. The right incentives drive vendors to action. Participation analysis suggests that vendor involvement is closely tied to rebate levels. The Express Efficiency program recently changed its approach to rebate structure. Historically, base rebate prices for many measures were raised during promotional periods to generate more participation. The IOUs retained a consultant to develop a systematic approach to rebate pricing. The consultant recommended higher baseline rebates in late 2003 instead of seasonal promotional pricing. In late 2003, the CPUC authorized the Express Efficiency program to increase incentive levels by up to 60% for energy efficient measures for small and medium-sized customers. Most vendors interviewed as part of the 2002 evaluation preferred consistently higher rebates that do not change instead of seasonal sales. The shift to consistent rebates accommodates customer lead time and schedules and simplifies vendor marketing and business planning.

Unlike past years, the IOUs do not plan any sales promotions because, when base rebate levels are set appropriately, there should not be a need for sales. Thus, the statewide Express team intends to keep rebates constant throughout PY2004.

Most Vendors Expect a Sale in 2004

In PY02, the biggest spikes in participation occurred during sale periods. For example, nearly three-quarters of PG&E's program activity (i.e. number of items rebated, rebates paid, and first year kW and kWh savings) occurred during the last quarter of 2002. Express Participation was clearly driven by the summer and (in particular) fall sales in 2002. Not only do most vendors do more business through Express during seasonal promotions, some wait for a sale to occur. As one vendor remarked in 2002, "We lose half of the year sitting around waiting. PG&E doesn't pay enough, then doubles the rebates at the last quarter." (Quantum Consulting, 2002, p 4-10) Initially low rebate levels and seasonal promotions created a wait and see environment among vendors in 2002. Vendors have tended to wait until the fall, when incentives are typically increased, to do business through Express. To manage vendor expectations, the IOUs explained the new rebate levels—and the intention to end seasonal promotions—in PY04 kickoff meetings with vendors.

[52] It is important to note that this is a percentage of all bulbs installed, not just rebated CFLs.

Despite the IOUs efforts to notify vendors that seasonal promotions will not occur in 2004, nearly 75% of lighting vendors interviewed expect a sale. Most expect a sale because "there's one every year." Two vendors did volunteer that the IOUs had informed them there would be no seasonal promotions in 2004. Of those two, one believes no sale will occur; the other expects the IOUs will continue to rely on sales, despite the IOU's message. "I am expecting it even though they are all saying they won't be, because I know the utilities are struggling with the Express Efficiency program. They are not having the involvement they have had in the past and they need to move the funds. Last year they said they would not do a vendor incentive, and they did one anyway. I wouldn't be surprised if they do one anyway this year."

Vendor Opinions on PY04 Rebates

Vendors were asked their opinions about the new rebate levels. In their interview, vendors were first informed that, "In late 2003, the utilities increased rebates for many of their measures. The utilities did this with the expectations of having rebates stay constant throughout the year. They are not expected to have any sales promotions. The utilities did this in part to help manage vendors' and customer expectations about program rebate levels." Next, vendors were asked:

"From what you know of the current rebate levels, do you feel they are appropriately set to get customers to improve the efficiency of lighting in their businesses?"

About half felt current rebate levels were appropriate. The other half felt rebate levels were too low. Two believed rebate levels were appropriate for customers, but too low for vendors. Two vendors recommended increasing T-8 rebates "because there is a lot of work involved."

Vendors were queried on changes they like to see in rebate levels, with an eye toward the tradeoffs program managers must make in adjusting rebates:

> "If you reduced the rebate on some measures in order to increase the rebate on other measures, which measures would you **increase** rebates for?"

Exhibit 5-4 below shows vendors' recommendations for changes in rebate levels.

Exhibit 5-4
Vendor Recommendations on
Different Rebate Levels

P2/P3. If you reduced the rebate on some measures in order to increase the rebate on other measures, which measures would you i**ncrease/decrease** rebates for?	Increase rebates for:	Decrease rebates for:
CFL lamps	11%	15%
Compact and linear fluorescent fixtures	7%	4%
T8 linear fluorescen lamps with electronic ballast	33%	
4-ft T8	7%	
8-ft T8	9%	
high bay	4%	
T5	9%	
occupancy sensors	4%	11%
photocells		7%
timeclocks		11%
LED exit signs		4%
exterior lights		11%
HID	4%	4%
other	9%	7%
don't know	4%	26%
N	48	36

Rebates to Increase. With respect to *increasing* rebates, no other measure is mentioned as much as linear fluorescent fixtures. About two-thirds of the respondents mentioned increasing some form of linear fluorescent — 4 foot T-8, 8 foot T-8, T-5, T-8 with electronic ballast, and high bay. Furthermore, no vendor suggested decreasing rebates for linear fixtures. It is not surprising that lighting vendors desire increased T-8 rebates in light of the fact that high volume T-8 vendors are not doing much T-8 business through the program.

Rebates to Decrease. Vendors are suggesting that CFL rebates be *decreased* more than any other measure, however less than 20% of the respondents made this suggestion. In addition, vendors recommend smaller rebates for controls and sensors (i.e. photocells, time clocks).

5.4.2 Influence of Rebate on CFL and T-8 Sales

Vendors were asked to estimate the effect of hypothetical changes in rebate level under two scenarios – if rebates were doubled or if rebates were cut in half – on their Express sales, weighted by volume. CFL vendors claim their sales would increase 36% with a double rebate and drop 31% if rebates were cut in half. T-8 vendors were less sensitive to rebate levels, anticipating sales would increase only 17% with a double rebate, and drop only 10% if rebates

were cut in half. In sum, T-8 vendors are less sensitive to a change in rebate levels than CFL vendors. A change in T-8 rebate levels more does not drastically affect vendors' sales. CFL sales seem to depend on rebates far more than T-8 sales. However, T-8 vendors are more sensitive to increases in rebates relative to decreases in rebates than CFL vendors, likely because vendors are not currently doing as much business through Express as are CFL vendors. This is consistent with the vendor findings discussed above regarding measures that should have increased rebates (T-8s), relative to those that could potentially decrease (CFLs).

Exhibits 5-5 and 5-6 below show anticipated changes by vendor size.

Exhibit 5-5
Expected Change in CFL Sales as Result
of a Hypothetical Change in Rebate Level

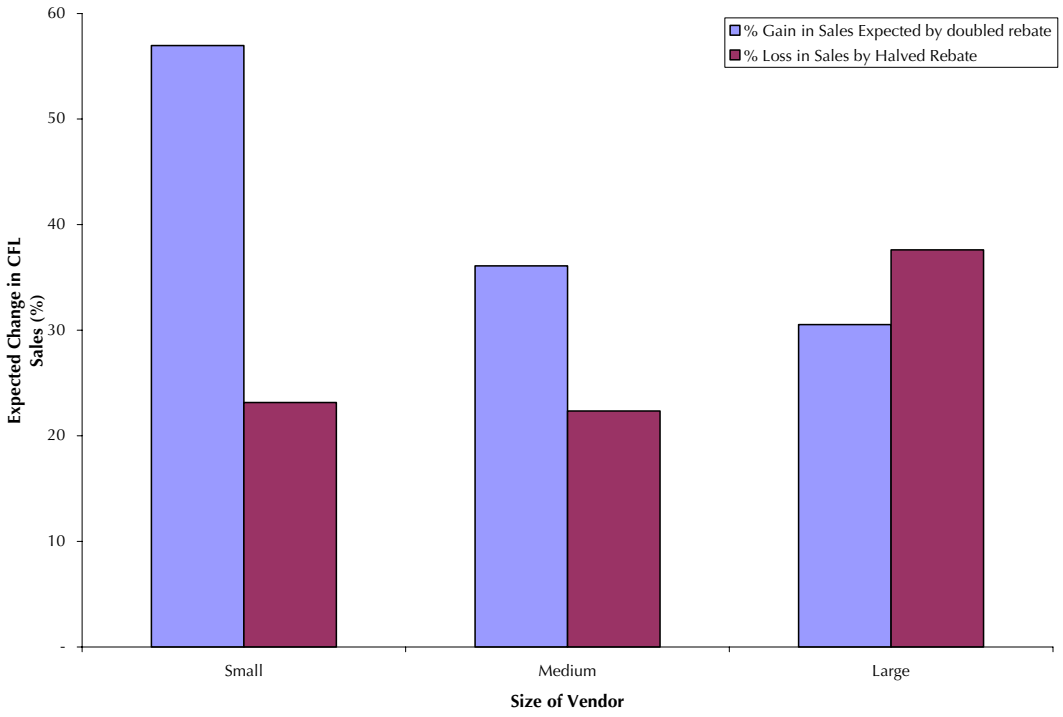
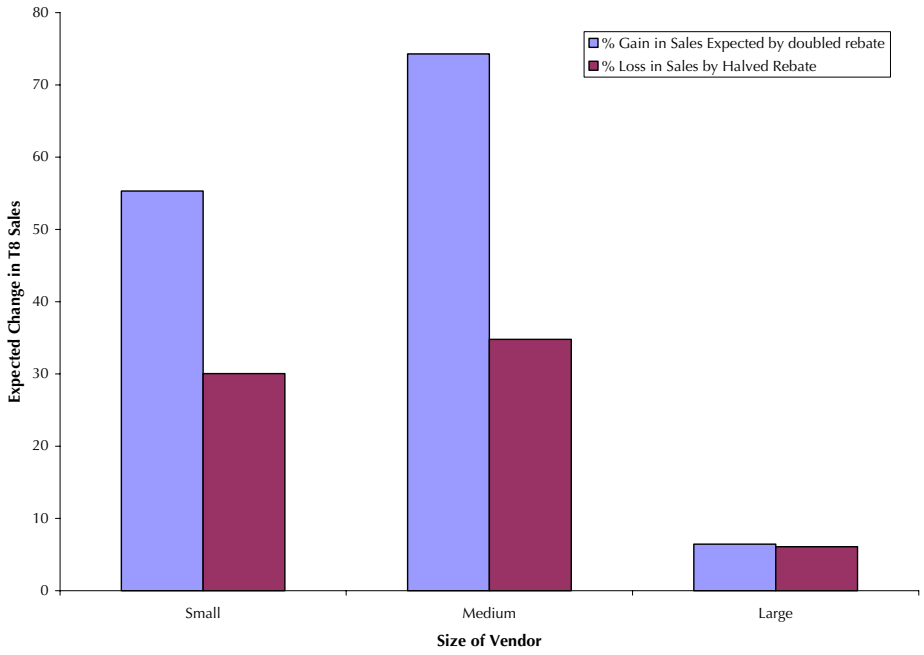


Exhibit 5-6
Expected Change in T-8 Sales as Result of a Hypothetical Change in Rebate Level



Large T-8 vendors are not as sensitive to changes in rebate levels as the other groups because they're not doing as much work through the program. Interestingly, medium sized vendors are the most sensitive to increases in T-8 rebates, claiming over a 70% increase in sales if T-8 rebates doubled.

5.4.3 Delamping

About a quarter (26%) of T-8 jobs involve delamping. Vendors that practice delamping indicate that delamping is appropriate 44% of the time. However, only 58% of vendors interviewed practice delamping. Vendors that practice delamping believe that customers usually delamp when appropriate. Given that 42% of the vendors are not practicing delamping, these findings suggest that there is a lot of potential for delamping.

These findings raise a puzzle: why do many vendors opt not to promote delamping when customers usually choose to delamp when a vendor recommends it? One reason why vendors may not promote delamping is because delamping jobs are more expensive, making it harder to close a delamping sale with a cost-conscious customer.

The current rebate structure may exacerbate this problem by creating a potential disincentive for customers to delamp. Based on the 2001 DEER database, the gross incremental cost for retrofitting a four foot 4 lamp T-12 system to a 4 lamp T-8 system is $43. The gross incremental cost for retrofitting a 4 lamp T-12 system to a 3 lamp T-8 system with reflectors is $63. Even though delamping provides significantly more savings than retrofitting the lamp, and even though delamping costs significantly more, the rebate for delamping is only one third the

amount for retrofitting the lamp ($2.40 for delamping versus $6.80 for retrofitting). After rebate, the cost to the customer for retrofitting a four foot 4 lamp T-12 system to a 4 lamp T-8 system would be $15.80, compared to a cost of $40.20 to delamp. Therefore, the out of pocket costs after rebate to delamp from the customer's perspective is two and one-half times as much.

Based on SCE's PY2003 savings assumptions, the straight 4 lamp retrofit saves approximately 193 kWh per year over a 16 year period. The delamp scenario saves 346 kWh per year over the same 16 year period, or approximately 80% more savings. Assuming an energy cost of 15 cents per kWh to the customer, without any rebate, a simple payback calculation would result in a 1.5 year payback for the straight retrofit, and a 1.2 year payback for the delamp scenario. Without rebate, the delamp scenario is both more attractive to the customer, and more cost-effective from a TRC standpoint. However, after rebate, the simple payback for the straight retrofit would be 0.5 years compared to 0.8 years for the delamp scenario. Therefore, after the rebate, the delamp scenario is no longer as attractive to the customer. These values are summarized in Exhibit 5-7 below.[53]

Exhibit 5-7
Comparison of Payback for T-8 Retrofits with and without Delamping

Measure	Gross Incremental Cost*	Rebate	Cost After Rebate	kWh Savings**	Annual Bill Savings***	Payback before Rebate	Payback After Rebate
4 Lamp T-12 to T-8 Replacement	$43.00	$27.20	$15.80	193	$29.01	1.5	0.5
4 Lamp T-12 to 3 Lamp T-8 Replacement with Reflector	$63.00	$22.80	$40.20	346	$51.97	1.2	0.8

* DEER
** SCE PY2003 CPUC Workbook
*** Assumed 15 cents per kWh

During the first quarter of 2003, there was a winter promotion in effect that offered a $4.50 per lamp rebate for delamping, and a $5.00 per lamp rebate for T-12 to T-8 retrofits. Bringing these two rebates more in line with each other significantly boosted delamping participation relative to T-8 retrofit participation. Exhibit 5-8 below presents the number of delamping and T-8 lamps retrofitted under the three different rebate scenarios that occurred during 2003. As discussed, during the first quarter, rebates for the two measures were very similar. During the second and third quarter, rebates dropped to $1.50 for delamping and $4.25 for retrofits, a significant difference. Similarly, in the last quarter of the year, delamping increased to $2.40 and straight retrofits to $6.80 per lamp, maintaining the large disparity in rebate amount. In the first quarter, the delamping activity was 29% as much as the number of T-8 lamps retrofitted. In the second and third quarter, this value dropped to 19%, and in the fourth quarter it dropped further to only 12%. This trend is highly correlated with the increase in disparity between the two rebate values. Looking at the number of applications submitted with delamping versus T-8 retrofits, there were two-thirds the number of delamp applications as T-8 applications in the first quarter, only one-third in the second and third quarter and only one-fifth in the fourth quarter.

[53] Keep in mind that the gross incremental costs are based on the 2001 DEER study, which may be somewhat outdated, and are currently being updated.

Exhibit 5-8
Effects of Delamping Activities with Changes in Rebate Levels

PY2003	Rebates			Measures installed		Applications Submitted		Ratio Delamp to T-8	
Timeframe	Delamp	T-8	Difference	Delamp	T-8	Delamp	T-8	Measures	Applications
Q1	$4.50	$5.00	($0.50)	14,918	51,729	116	172	29%	67%
Q2-Q3	$1.50	$4.25	($2.75)	21,256	112,587	158	517	19%	31%
Q4	$2.40	$6.80	($4.40)	32,956	282,399	196	965	12%	20%

Delamping was a major contributor to some of the IOUs pre-1998 commercial DSM programs. For example, delamping contributed a quarter of PG&E's net kWh savings between 1994 and 1997. During this timeframe, PG&E paid significantly higher rebates for delamping relative to per lamp T-8 retrofit rebates. For example, in 1995 PG&E paid $7.00 for delamping compared to $4.50 per lamp for T-8 retrofits.

Vendor interviews confirm these findings that one of customers' primary reasons for not delamping when it is appropriate, is due to cost. Some consideration should be given to revising delamping rebates, making them more in line with T-8 rebates, or perhaps higher, to alleviate this disincentive.

Vendor interviews validate that current delamping rebate levels are not attractive to vendors. Although 60% of the vendors that did delamping jobs were aware that incentives for delamping increased in late 2003, the higher rebate has not affected the amount of delamping they do. However, these vendors believe that another increase in rebate levels would boost delamping activity. A few vendors volunteered opinions on an appropriate rebate level; their responses ranged from $4.50 to $9.25/lamp.

A second issue why vendors may not actively promote delamping is perceptions about poor light quality. Vendors cited light quality as another primary reason why customers choose not to delamp where applicable. Some customers wonder whether the light level will be adequate for their needs.

Vendors suggested three ways to overcome these quality and cost issues.

- **Reduce cost.** First, most strongly recommended was to increase delamping rebates to offset costs on reflectors and encourage use of reflectors.

- **Customer education.** Second, some vendors believe that marketing and information materials from the IOUs will serve to educate customers as well as enhance vendor credibility, thus helping them sell delamping jobs. As one noted, "Selling is education. Once customers realize they can get twice as much light for the same energy – when people understand light cycle costs in energy – then it sells itself." One vendor encouraged SCE to "educate the customer on pre and post lighting levels because customers look at Edison as the people who know everything." Another suggested the IOUs produce a chart that demonstrates how converting from a four-lamp to a three- or two-lamp fixture for vendors to distribute to cost-conscious small businesses to help them understand how much savings delamping offers.

- **Test installations.** Several vendors have adopted quality control practices to overcome customer concerns about light quality. They do test installations with a light meter to demonstrate that the customer will not lose light. One vendor reported that, "We'll do three or four fixtures and have them take a look at the fixtures and if they are not happy with it we will go with a standard ballast lamp replacement." Another observed that, "We do pre and post light level readings - it creates a lot of confidence in the customer."

Quality control practices. Past program experience has flagged quality control as an issue in delamping. Several vendors have responded to reluctance in the market to delamp, have developed quality control practices to increase customers' confidence in delamping, such as test installations. Other programs, such as SMUD's lighting program for small customers, requires vendors to document pre- and post- light level readings. SMUD used light level requirements to ensure the quality of delamping projects, which accounted for more load reduction than any other measure in SMUD's 2003 Small Commercial Prescriptive Lighting Program. Vendors sent SMUD a sketch with pre-existing light level readings and post-installation lumen reading. Project approval depended upon pre- and post-installation levels, to ensure that retrofits were appropriate.

However, vendors were asked if a pre- and post- light level reading program requirement would help overcome customers' concerns about lighting quality, and nearly three-quarters did not believe such a requirement would alleviate customer concerns. A few agreed that such a requirement might help customers, but pointed out that additional inspections would delay projects ("a pain," "bureaucracy," "too much information," "makes my job harder"). Others pointed out that customers are not going to notice the difference in light levels, nor are they are familiar with light meter readings.

5.5 ENERGY EFFICIENCY PROGRAM COMPETITION

While over three-quarters of vendors interviewed participate in other utility energy efficiency programs, the majority do more business through Express than other programs. However, a significant minority—one-third—report doing more business through third party programs. California IOU programs (i.e. SPC, Multifamily), municipal utilities (most often SMUD) and non-California utilities were most frequently mentioned. In addition, vendors said that they participated in third party programs such as Local Small Business Energy Efficiency Program in Santa Cruz, Monterey and San Benito Counties (Ecology Action of Santa Cruz), The Energy Saver's Program (RLW), Business Energy Services Team (BEST, run by KEMA-Xenergy), SmartLights Program (Community Energy Services Corporation), Halogen Torchiere floor lamp replacement in institutional buildings (Ecos Consulting), LightWash and the San Francisco Peak Energy Program (PEP). Vendors doing more third party than Express jobs reported that their business currently goes to LightWash, Ecology Action, Multifamily, and PEP. One said that Stockton Brighter Business dominated their program activity in 2003.

Vendors cited two main reasons why they do more third party work than Express business.:

- **Higher rebates**. A vendor who primarily serves LightWash and Ecology Action reported that rebates are 2-3 times higher than Express. Another vendor said he concentrates on Multifamily because it "pays more."

- **Geography**. Program activity depends on location for two national vendors as well as a Southern California vendor who works in SCE and LADWP territory "because that's where my customers are."

Also, another vendor mentioned that he preferred installations through the Multifamily program because it is easier to reach apartment complexes than small businesses.

Reasons for preferring Express to other utility and third party programs included:

- **Savings based on equipment**. One vendor noted, "On the Express, you basically have your lamps and ballasts - on the major programs you have to prove 20% savings." However, another preferred doing business through LightWash because rebates are based on energy savings, not equipment.

- **Statewide territory**. Express Efficiency's statewide territory is attractive to vendors. One noted, "It's statewide and PEP is only one city."

- **Easy paperwork**. Vendors appreciate simple paperwork. "SPC is kind of heavy-handed , converting everything into line by line audit. With Express, it's just set up everything, plug in the numbers and send it in."

- **Aligns with vendor's target market**—both in terms of technology and customer size. One vendor that targets small businesses prefers Express, explaining that "Our business is more aimed toward the small to medium business—up to 500kW. The Express rebate hits more along the lines of what we are going after." Likewise, another says that "We target small businesses for PG&E." Another vendor that specializes in CFLs noted that Express "is an easier sell to the people—going from incandescent to CFLs."

5.6 PROCESS ISSUES

5.6.1 Application and Reservation Process

Vendor interviews focused on satisfaction with the application process and the reservation system.

- **Application Process is Too Slow**. About half the vendors interviewed are very satisfied with the application process. Another third are "somewhat" satisfied, while 17% indicate they are not at all satisfied. Dissatisfaction primarily stemmed from rebate turnaround time. "It takes too long to get my money." "The process takes to long. We are averaging about 45 days to get paid." Vendors want faster turnaround. "Speed up the application process." "I think it is better for the process if the time for the cutting of the check is less than two weeks."

- **Reservation System is Cumbersome**. Similarly, half the vendors are very satisfied with the reservation process. Another third are "somewhat satisfied," and the rest are not at all satisfied. The biggest complaint was that the reservation system is unnecessary and time-consuming. One noted that the IOUs jettisoned a streamlined reservation system

("we would call to get the reservation and they would give us a reservation number") in favor of a more cumbersome process ("now we have to give them a breakdown of what we need the rebate money for which is a lot more time consuming. We're doing the work four or five times over.") Vendors also believe the reservation process takes too long because there aren't enough qualified people staffing the phones ("Add more people - sometimes it's difficult to get through on the phone." "Have more qualified people on the phones so they understand what we are saying.")

5.6.2 Vendor Suggestions For Program Enhancements

Vendors had a variety of suggestions for improving the process of participating in Express Efficiency.

- **Speed up application process**. Vendors confirmed IOU program staff beliefs that application turnaround time is closely linked to vendor satisfaction. Vendors had several suggestions for speeding up the application process.
  - *Electronic application submission*.
  - *Build payment release form into application*. Integrating the separate payment release form on the application would streamline the application process for vendors.
- **Reservations for large jobs only** (i.e. applications greater than $2000-3000).
- **More qualified staff**. Vendors want more staff to answer the phone and inspect jobs in the field.
- **Early project approval**. Approval at the beginning of the process (e.g. pre-inspections) reduces the downside risk for vendors.
- **Allow large customers into Express Efficiency**. A few vendors cited the cost of reaching small customers and their lack of knowledge ("most businesses don't have a full-time facilities manager who speaks electricity") as barriers to serving that market.
- **Field visits from IOU account executives**. Contact with IOU representatives helps sell Express Efficiency jobs to small businesses who do not understand the benefits of energy efficiency and distrust vendors
- **Eliminate restrictions on high bay lighting.** There are two stipulations that do not affect energy savings and compromise vendors' ability to engineer super energy efficient systems:
  - fixtures must be mounted over 15 feet
  - rebate are only paid for 4- and 6-lamp fixtures

  Eliminating those restrictions would help vendors engineer super energy efficient high bay systems.

- **Encourage commercial grade CFL fixtures to improve product quality**. One vendor was dissatisfied with quality of a particular brand of fixture that creates maintenance problems and decreases energy savings.

- **Educate vendors on delamping strategies**, such as different light levels for various applications so they are confident that their light levels are appropriate for their application.

5.6.3 Additional Technologies to Rebate

Vendors would like to see several technologies included in the program. Vendors mentioned rebates for:

- cold cathode exit signs

- CFL stairwell fixture with wall sensor

6. COST-EFFECTIVENESS BENCHMARKING

This chapter presents the benchmarking analysis, comparing the cost-effectiveness of the Express Efficiency program with similar local and third party programs offered in PY2003. Seven similar local programs offered in 2003 that were implemented by both the California Investor Owned Utilities (IOUs) and independent third party administrators were selected for comparison to conduct this benchmark. In general, these programs installed primarily lighting measures, and were targeted at the very small and small nonresidential customers, often in rural areas. As part of the regulatory requirements, budgets and program accomplishments for CPUC-funded energy efficiency programs were made publicly available, including estimated costs for administration, gross incremental measure costs, and program savings estimates. These budgets and program filings[54], which included some cost-effectiveness calculations, were analyzed to benchmark the Express Efficiency program's cost-effectiveness.

6.1 PROGRAM COMPARISON

The seven local programs chosen were similar across several key dimensions:

- **HTR focus.** Six of these seven local programs were exclusively offered to HTR markets:
  - Two were offered only to very small nonresidential customers (with peak demand less than 20 kW) . Furthermore, three other programs had three-quarters of their participation comprised of very small customers.
  - Four were offered only to customers in rural areas.
- **Direct install program design.** These programs were typically direct install type programs that offered incentives that averaged anywhere from 50% to 100% of the measure cost.
- **Emphasis on lighting measures.** These were primarily lighting programs, with lighting measures generally consisting of 90 to 100% of the programs' goals.
- **Free Energy Audit.** All of these programs were marketed along with a free on-site energy audit in order to identify potential energy efficiency measures for the program.

The following Exhibit 6-1 summarizes these program characteristics, and shows the average program characteristics (weighted by each individual program's gross resource benefit), compared to the Statewide Express Efficiency program.

[54] Program budgets, implementation activities, program accomplishments, measure savings parameters and cost-effectiveness estimates were submitted to the CPUC as part of an integrated workbook along with a final report narrative. Most final report narratives and workbooks were submitted in mid 2004, and were generally available on the implementer's web site.

Exhibit 6-1
Characteristics of Programs Selected for Benchmarking Analysis
–California Energy Efficiency Programs Offered in 2003 –

	Hard to Reach Characteristics			Measure Portfolio			Typical Incentive
Program	% <20kW	% 20-100 kW	% Rural	% CFL	% T-8	Ave. Measure Life (Years)	(% of Measure Cost)
1	25%	68%	100%	***15%***	***83%***	16	50%
2	73%	21%	100%	***15%***	***82%***	14	50%
3	0%	100%	5%	10%	89%	15	75%
4	79%	21%	100%	30%	68%	13	50%
5	80%	20%	100%	39%	48%	16	100%
6	100%	0%	10%	15%	83%	14	100%
7	100%	0%	5%	32%	66%	13	75%
Average	**62%**	**36%**	**72%**	**23%**	**73%**	**15**	**70%**
Express Efficiency	**48%**	**34%**	**22%**	**53%**	**18%**	**10**	**32%**

Overall, these seven local programs served primarily very small customers (62% versus 48% for Express), in rural areas (72% versus 22% for Express). None of the programs specifically targeted renters or primarily Spanish speaking customers, which are two HTR segments that could still be looked at for future programs. These seven local programs also achieved nearly three-quarters of their savings from T-8 related installations and a quarter from CFLs, compared to Express which achieved over half its savings from CFLs, only 18% from T-8s and 29% from other measures (including HVAC, water heating, refrigeration, agricultural and food service measures). Because Express relied heavily on CFL installations, its average measure life was only 10 years compared to 15 years for the local programs. The local programs paid significantly higher rebates than Express (2 of which covered 100% of the measure cost), paying on average 70% of the measure cost compared to only 32% for Express.

One other distinguishing factor is that all seven of the local programs provided some form of an energy audit, whereas Express did not. However, IOU customers could receive an audit through the Statewide Nonresidential Audit program. In order to more accurately benchmark Express Efficiency's cost-effectiveness with these seven local programs, a portion of the cost of the Statewide Nonresidential Audit program was added to the cost to implement the Express Efficiency Program. More specifically, 50% of the cost to implement the Statewide Nonresidential Audit program was treated as an implementation expense for the Express Efficiency program. Fifty percent was assumed because the Audit program also serves medium and large customers, which benefits the Statewide Standard Performance Contract program.

6.2 COST-EFFECTIVENESS COMPARISON

In order to benchmark the Express program, the following cost-effectiveness metrics were calculated for each of the seven local programs and the Express Efficiency program:

- **Total Resource Cost Test Ratio:** the net avoided costs of supply over the life of the measures (net resource benefit), divided by the program and participant costs (total costs to administer and install the measures).

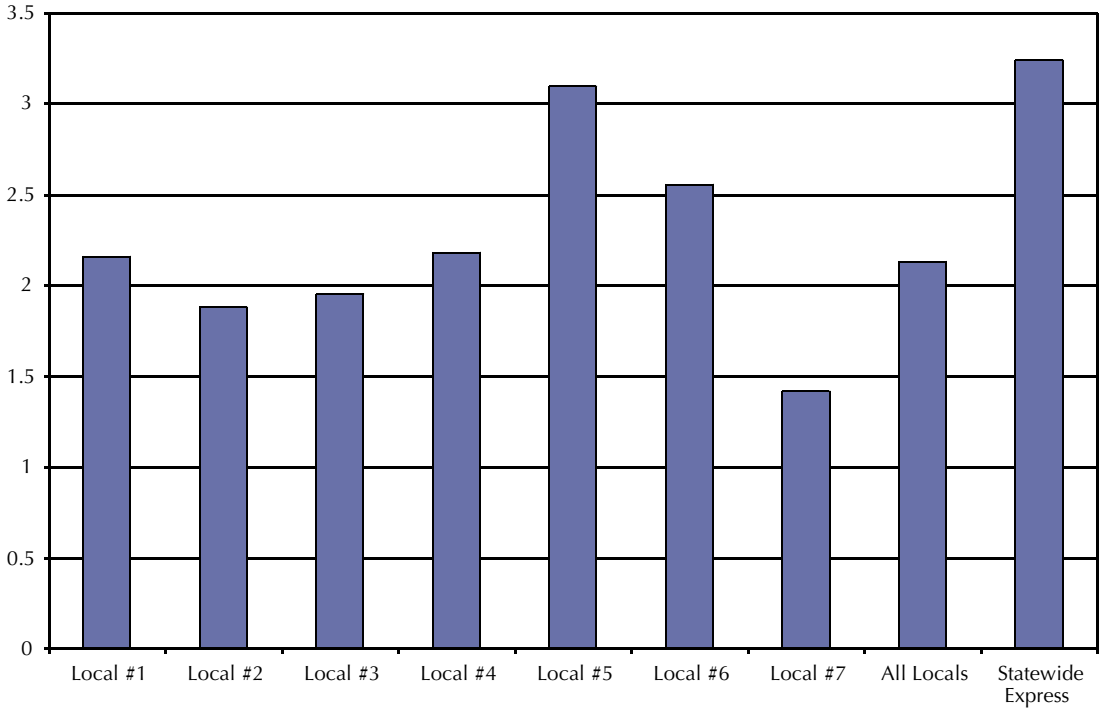
- **Participant Test Ratio:** the net resource benefit plus the incentives received, divided by the participant costs (total costs to install the measures).

- **Program Administrator Test:** the net resource benefit, divided by the total program cost.

- **Levelized Cost per kWh Saved:** the annualized total program cost (where the program cost is annualized over the average life of the measures installed, using a discount factor of 8.15%), divided by the annual energy savings.

Exhibit 6-2 presents the TRC's for each of the seven local programs, along with the average TRC for these programs (weighted by the program's gross resource benefit), compared with the Express Efficiency program. Again, please note that the TRC for Express includes 50% of the costs of the Statewide Nonresidential Audit program.

Exhibit 6-2
Total Resource Cost of Programs Selected for Analysis
– California Energy Efficiency Programs Offered in 2003 –

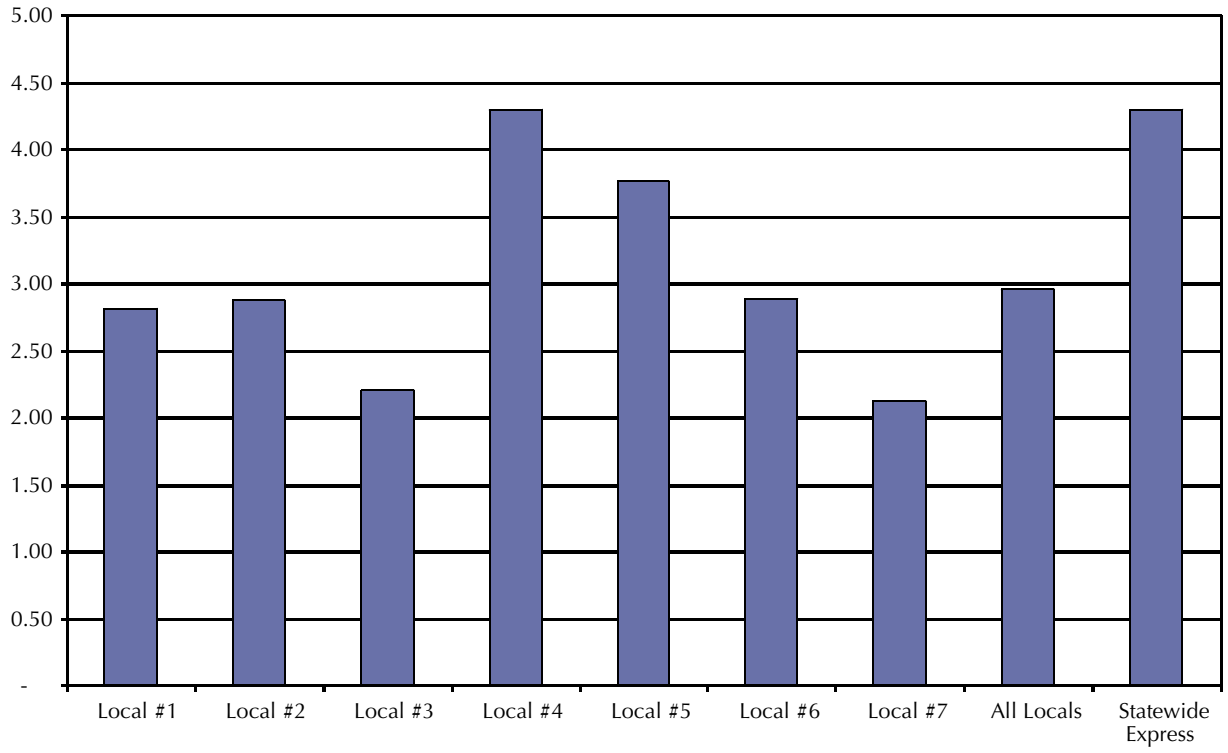


*Note: Fifty percent of the Statewide Nonresidential Audit's program cost has been added as an expense to Express Efficiency. Without this cost, the TRC would be 3.6.

The TRC's for each of these program vary significantly, ranging from 1.4 to 3.2. However, the variation may be more a factor of each program's measure mix and assumptions regarding measure costs, life and savings, than the actual performance of the program.

For example, based on the measure life, costs and savings for all the measures installed during 2003, the Express program generated $4.30 in gross avoided costs of supply over the life of the measures (gross resource benefit) for every dollar of measure cost installed. This compares to an average of only $2.96 in gross benefits for the seven local programs. This large variation is primarily due to the fact that the Express program relies more heavily on CFL installations, but is also a function of different assumptions about per unit estimates of measure cost, life and savings. Exhibit 6-3 compares the gross benefit per dollar of measure cost installed for each of the seven local programs, their averages, and the Express Efficiency program.

Exhibit 6-3
Gross Resource Benefit per Dollar of Measure Cost Installed



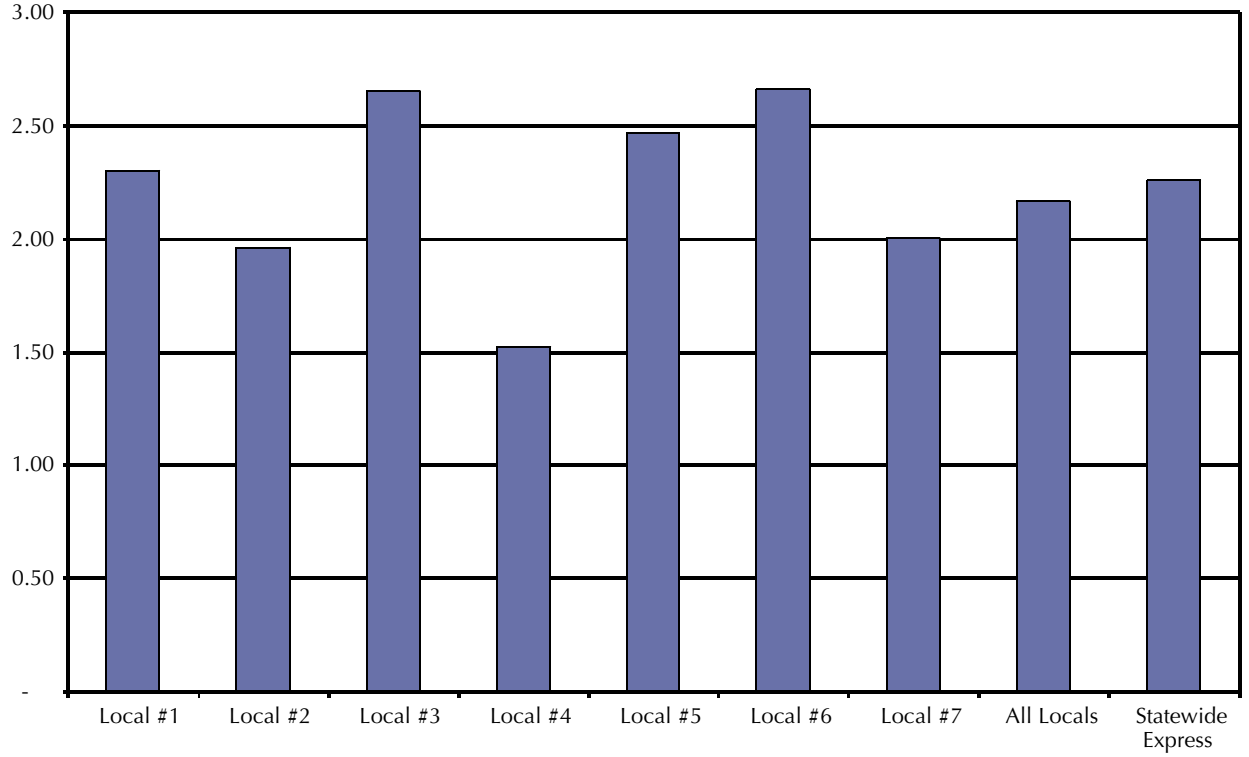
Examining Exhibits 6-1, which summarizes the programs' characteristics, and Exhibit 6-3 above, there is clearly a strong correlation between the measure portfolio and gross resource benefit per dollar of measure cost. Local programs number 1, 2 and 6 all have ratios of 2.8 to 2.9, and measure portfolios for which T-8s comprised 80-85% and CFLs 15% of the gross resource benefits. Similarly, local programs number 4 and 5 relied more heavily on CFLs (30% and 39% respectively), and had ratios near 4, more similar to Express.

In addition to measure portfolio, cost and savings assumptions for the same measures vary significantly across programs. Consider the ratio of annual kWh saved to the gross measure cost for T-8s and CFLs. One program assumed on average 2.4 kWh per dollar of measure cost

for a T-8, a second program assumed 3 kWh per dollar, while a third assumed 5 kWh per dollar. For CFLs, these same three programs assumed 20 kWh per dollar, 8 kWh per dollar and 15 kWh per dollar, respectively. Obviously, these differences have a huge impact on the TRC, particularly in light of the fact that 80-100% of the programs' savings are typically made up of these measures.

These differences in measure mix and measure assumptions are dealt with through normalization. Each program's net resource benefits (or net avoided costs of supply over the life of the measures) were set equal to three times the program's total gross incremental measure cost. Exhibit 6-4 presents the normalized TRCs for each of the seven local programs, the average TRC, and the TRC for the Express Efficiency program. These normalized TRC's indicate that the Express Efficiency program (which includes 50% of the cost of Statewide Nonresidential Audit program), compares well, with a TRC within 5% of the average of the seven local programs.

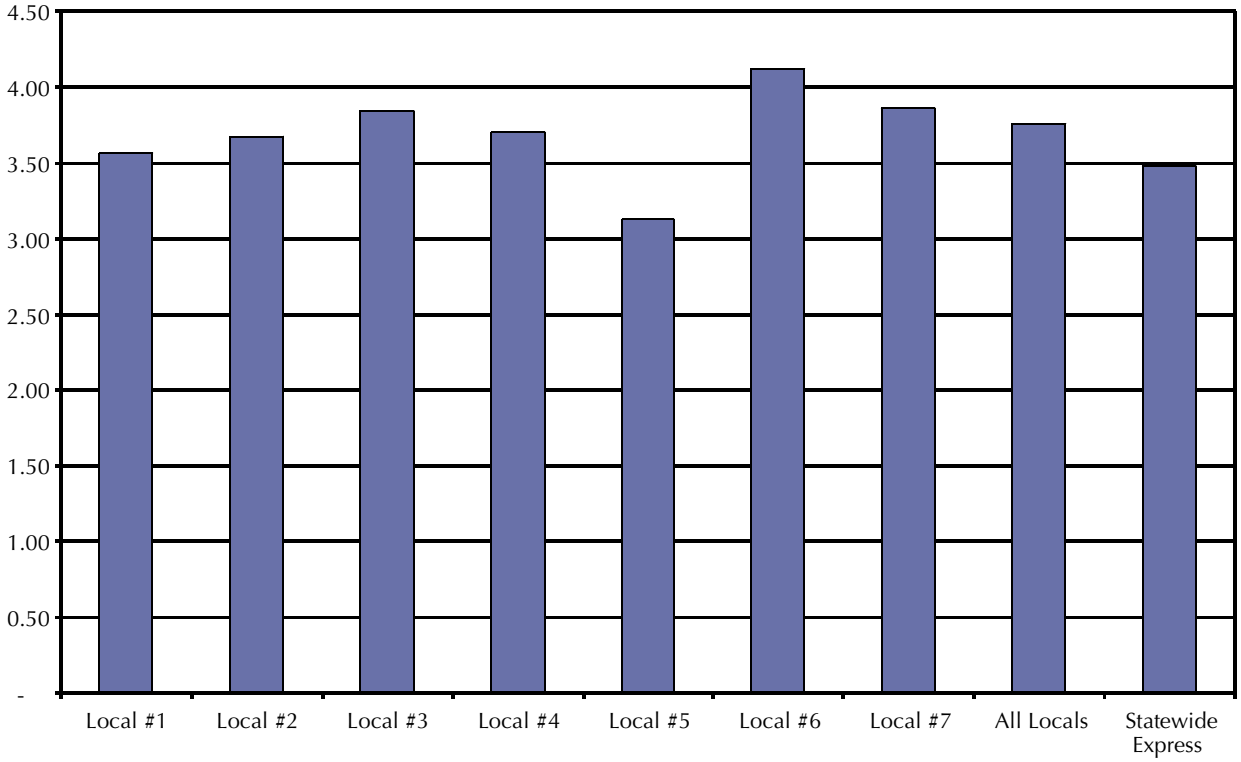
Exhibit 6-4
Total Resource Cost Test Ratios
Normalized to Net Resource Benefits = 3 x Gross Measure Costs



*Note: Fifty percent of the Statewide Nonresidential Audit's program cost has been added as an expense to Express Efficiency. Without this cost, the normalized TRC would be 2.5.

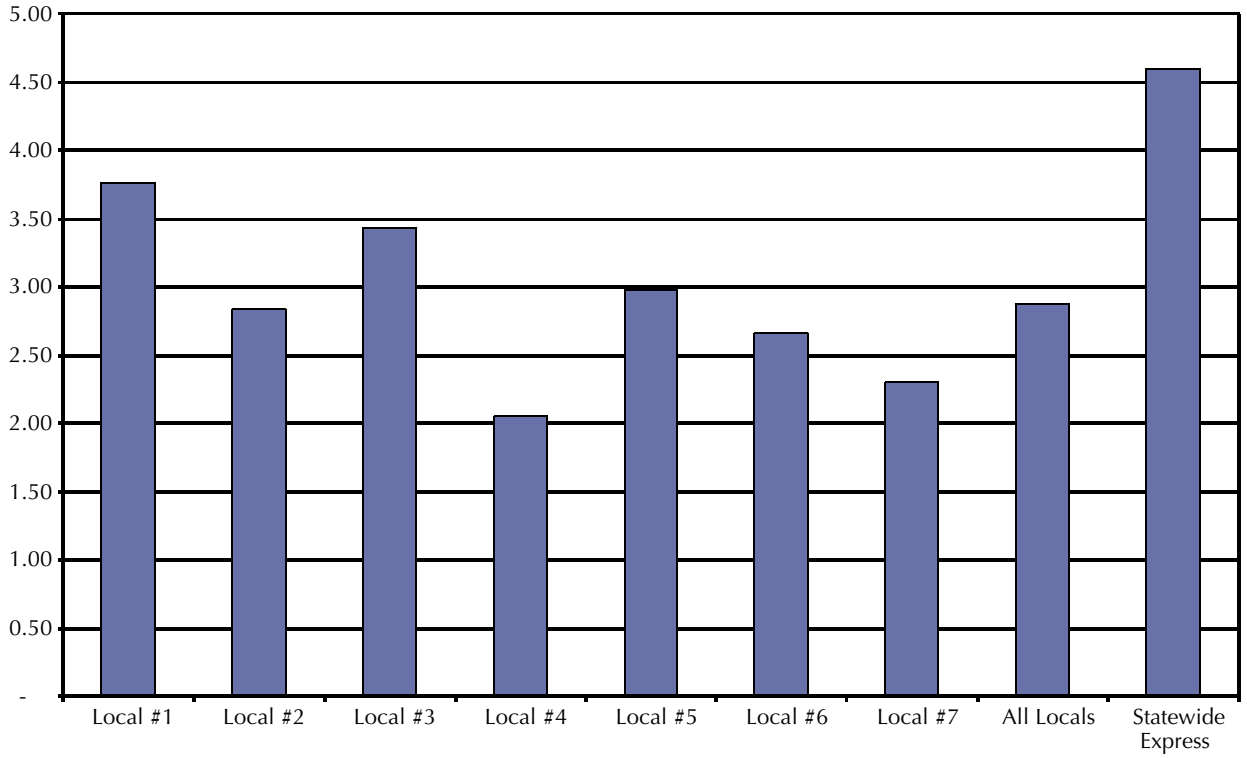
Exhibit 6-5 presents the normalized Participant Test ratio for each of the seven local programs, the average ratio, and the ratio for the Express Efficiency program. These normalized Participant Test ratios also indicate that the Express Efficiency compares well, with a ratio within 7% of the average of the seven local programs. The Express Efficiency Program's Participant Test ratio is lower than the average local program, even though its TRC is higher, primarily because it pays out lower incentives than the other program.

Exhibit 6-5
Participant Test Ratios
Normalized to Net Resource Benefits = 3 x Gross Measure Costs



As shown in Exhibit 6-6, the normalized Program Administrator Test ratio is significantly higher for the Express Efficiency program: Express is higher than all seven programs individually, and 60% higher than the average.

Exhibit 6-6
Program Administrator Test Ratio
Normalized to Net Resource Benefits = 3 x Gross Measure Costs

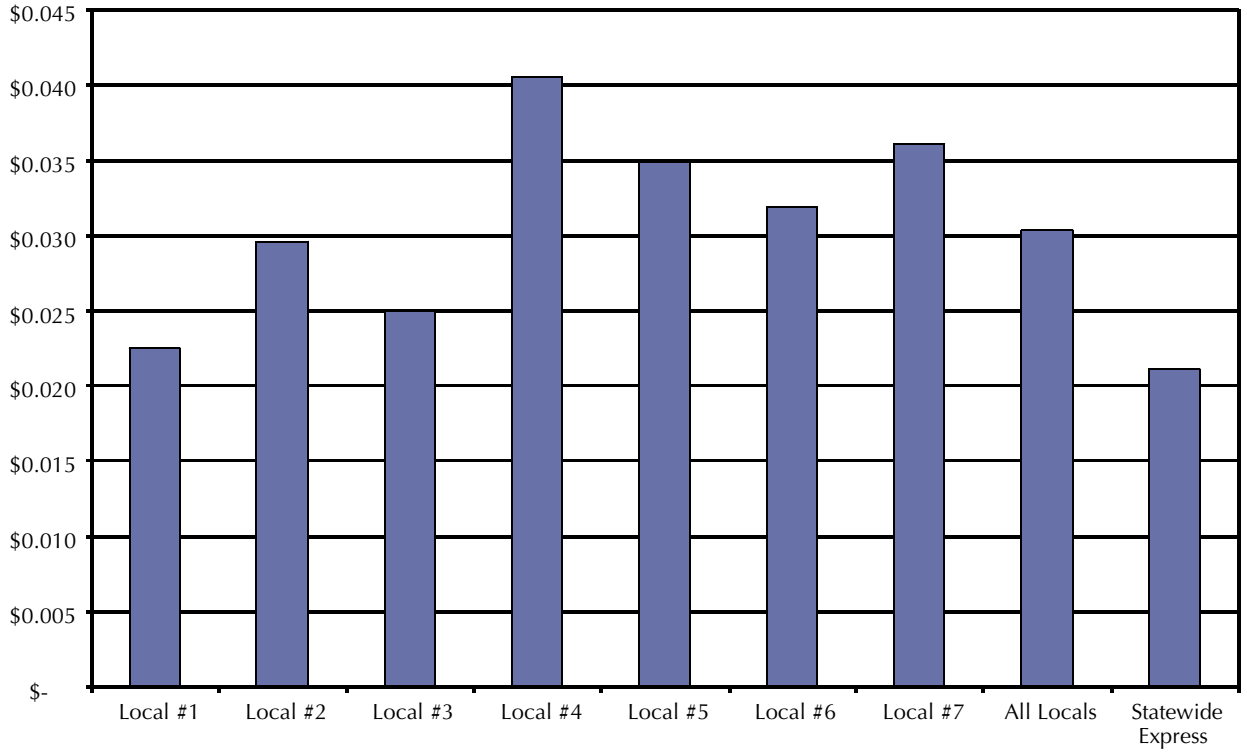


*Note: Fifty percent of the Statewide Nonresidential Audit's program cost has been added as an expense to Express Efficiency. Without this cost, the Program Administrator Test ratio would be 5.7.

The primary reason why the Express Efficiency's Program Administrator Test ratio is so much higher is because Express pays out much less in rebates. Overall, the Express Efficiency rebate was only 32% of the measure cost, compared to an average of 70% for the seven local programs. Therefore, for every dollar spent in rebates, the Express program earns approximately twice the amount of resource benefit (assuming a similar measure mix).

This programmatic difference has a similar effect on the Levelized Costs per kWh saved, as shown in Exhibit 6-7. The normalized Levelized Costs per kWh saved are substantially lower for the Express Efficiency program: Express is less than all seven programs individually, and 30% lower than the average cost.

Exhibit 6-7
Levelized Costs per kWh Saved
Normalized to Net Resource Benefits = 3 x Gross Measure Costs

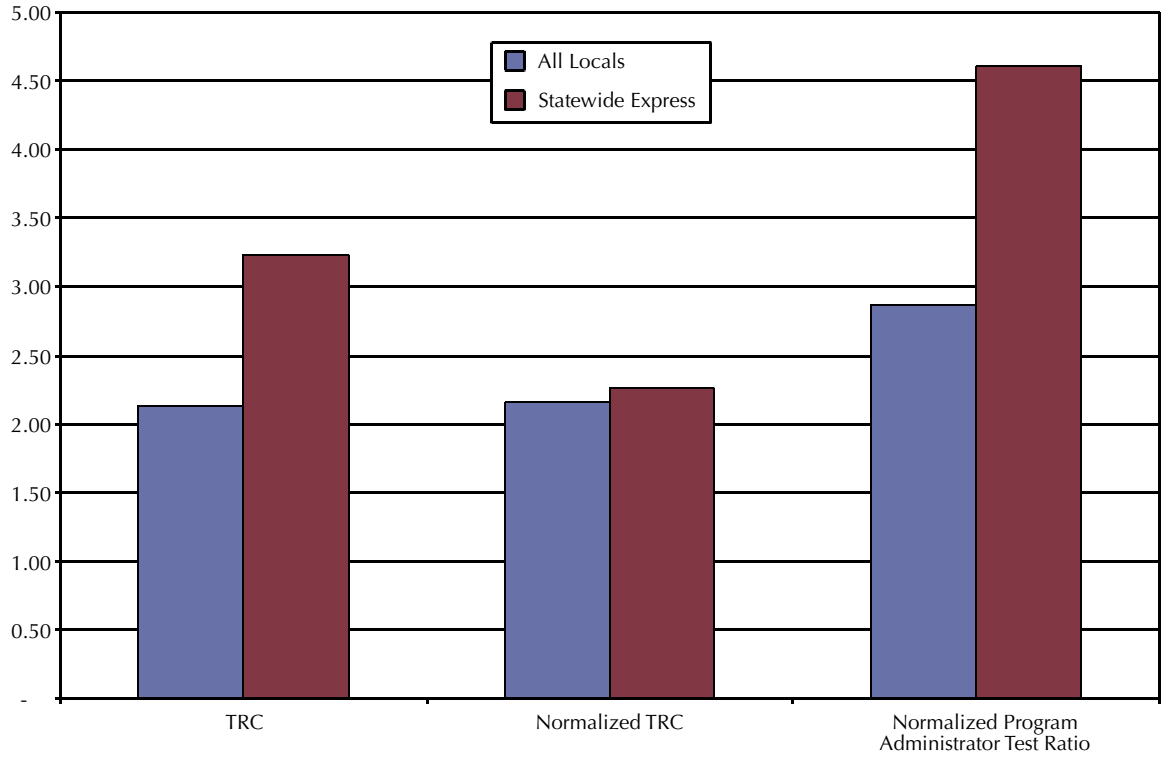


*Note: Fifty percent of the Statewide Nonresidential Audit's program cost has been added as an expense to Express Efficiency. Without this cost, the Levelized cost would be 1.7 cents per kWh.

6.3 SUMMARY OF FINDINGS

Overall, as shown above and summarized in Exhibit 6-8, the Express Efficiency program compares favorably to the seven local programs. From an unnormalized TRC perspective, Express appears to be much more cost-effective. But when its measure mix is normalized to account for the significantly higher proportion of CFLs installed (as well as other assumptions about cost and savings), the Express Efficiency program is very similar to the seven local programs (after 50% of the Statewide Nonresidential Audit costs are added to the Express program cost). It's important to note that Express does have the advantage of more economies of scale, serving the entire state; it is a mature, branded program, being in place since 1998; and tends to serve less very small and rural customers (six of the seven local programs serve 100% hard-to-reach customers).

Exhibit 6-8
Key Cost-Effectiveness Metrics
– Average Local Program Compared to Express Efficiency –



*Note: Fifty percent of the Statewide Nonresidential Audit's program cost has been added as an expense to Express Efficiency.

The metrics where Express appears to be much more cost-effective is with Levelized Costs per kWh saved and Program Administrator Test, which are significantly more cost-effective than the local programs, even after normalizing for the differences in measure mix, and cost and savings assumptions. Because Express pays significantly lower incentive levels, it is able to generate much more benefit per program dollar. However, as mentioned above, its participant population is not comprised of hard-to-reach customers to the extent that the local programs are. The local programs feel they must pay higher rebate levels to penetrate the hard-to-reach market and overcome first cost market barriers.

Therefore, the local programs and the Express program complement each other well. Express is able to capitalize on a broader customer base and maximize its net benefit given its fixed resources; whereas the local programs can cost-effectively serve the hard-to-reach market (from a TRC standpoint) relying on higher incentives. Furthermore, the direct installation approach taken by the local programs has resulted in a much more comprehensive set of lighting measures being installed. Some consideration should be given to relaxing the hard-to-reach goals placed on Express, and extending eligibility to large customers (>500 kW), as this will allow the Express program to further maximize its net benefit, while allowing the local programs to fill the need of reaching the hard-to-reach segments. As discussed in Chapter 2, in 2001 when large customers (>500 kW) were allowed into the program to aid it in maximizing its energy savings in light of the energy crisis, the result was larger jobs (which helps reduce fixed

application, incentive processing and inspection costs), as well as improvements in the diversity of measures installed in the program.

Furthermore, the combined portfolio of the Express Efficiency program, with its HTR goals, and the local programs, which are almost exclusively serving the HTR market, may result in creating an inequity among the non-HTR customers. In other words, there may be too much emphasis on HTR customers at the portfolio level.

The CPUC currently has two somewhat conflicting policy objectives of maximizing the program portfolio's net resource benefit and meeting equity considerations. The first objective can be achieved by selecting programs with high Program Administrator Test ratios. The second objective can be achieved by selecting programs that can cost-effectively (with a minimum TRC of 1) serve the HTR market. For the nonresidential market, the Express Efficiency program is clearly better suited to meet the objective of maximizing the net resource benefit, while the local programs are better suited to meet the objective of cost-effectively reaching the HTR segments. Furthermore, the local programs are also better at minimizing lost opportunities, as they have proven the ability to install a more comprehensive mix of measures among HTR customers. Allowing the Express program to relax its HTR constraint and open its eligibility to the >500 kW market will further allow this program to maximize its net resource benefit given a restricted program budget. This recommendation is especially important for consideration in light of the aggressive energy savings goals, recently put forth by the CPUC in its Interim Opinion in Decision 04-09-060 on September 23, 2004.

2003 STATEWIDE EXPRESS EFFICIENCY PROGRAM

MEASUREMENT AND EVALUATION STUDY

APPENDICES

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March 21, 2005

APPENDIX A:

PROGRAM STAFF INTERVIEWS RESULTS

PY2003 EXPRESS EFFICIENCY STAFF INTERVIEW FINDINGS

A series of interviews were conducted with SCE, SCG, SDG&E and PG&E Express program staff. These qualitative interviews (conducted June-July 2004) were conducted to discuss program evaluation objectives, obtain program manager input to help refine objectives and research issues, ensure the Study will provide program managers with useful findings to help with future program design, and educate the evaluation team on program design, verification process, marketing activities, and vendor operations.

Interviews concentrated on four main areas:

- Verification
- Program accomplishments
- Process Assessment (rebate structure, statewide coordination, vendor involvement, effectiveness of program marketing, satisfaction with the program, third party competition, participation eligibility review and HTR participation)
- Program Changes & Innovations

The views and insights of Express program staff are summarized below.

VERIFICATION

Express program staff reported that their inspection processes in 2003 were as follows:

- **PG&E** conducted random inspections on 10% of applications, 100% inspections for any application over $2500 and over 100 CFLs. The average rebate application was $1600.
- **SCE** randomly selected 20% of participating sites for inspection. In 2003, SCE conducted mandatory inspection for jobs of $1000 or more, but increased that threshold to $2000 in 2004 in response to a higher rebate cap that increased the size of jobs.
- **SCG** randomly selected 5% of participating sites for inspection. Inspections raised a few equipment qualification issues, such as a couple of participants that had not installed program-qualifying boilers.
- **SDG&E** continued to inspect all participating sites due to concern with drop shipping. SDG&E increased the charge for re-inspection (10% of the entire rebate or $200, whatever was higher). This increase stemmed the problem in 2003 and helped weed out vendors that dropped shipment and submitted paperwork.

PROGRAM ACCOMPLISHMENTS

Express progress staff highlighted the following:

- In late 2003, **PG&E** offered a marketing incentive on three products to vendors in order to meet goals. PG&E made 60% of its goal in the last six weeks of 2003 as a result of this marketing incentive and increased rebates.

- For **SCE**, lighting led the field, especially CFLs and 4-foot T-8s. High bay lighting was a popular measure for SCE. A fourth quarter sale boosted business and tapped the rebate budget. SCE attributes its success directly to the new rebate levels introduced in 2003.

- In 2003, **SCG** exceeded goals within budget. SCG staff attributed the program's success to strong sales of greenhouse curtains and thermostats (rebates for these measures were increased in 2003). Boiler sales declined in 2003, as the market for C/I boilers has become saturated and numerous customers with boiler opted to go to third parties who were offering higher rebates.

- **SDG&E** fell short of kW and kWh goals despite an advertising blitz in late 2003 and enough project commitments to achieve goals. SDG&E believes the shortfall stemmed from PG&E's year-end vendor marketing incentive (which drew vendors into PG&E territory) and competition from third party programs targeting the same customers as Express.

PROCESS ASSESSMENT

Discussion of program process revolved around several areas: rebate structure, statewide coordination, vendor involvement, effectiveness of program marketing, satisfaction with the program, third party competition, participation eligibility review and HTR participation. Program staff feedback on area is discussed below.

Rebate Structure

In 2003, different rebates were offered at three points in time:

- January-April (bridge period): 2002 rebate structure in bridge period (i.e. Winter Sale)[1]

- April-September: base rebate for 2003[2]

- Sept-December: increased rebates up to 60%[3]

The statewide Express team commissioned a study of rebate levels intended to determine optimum rebate levels, based on four years of history from all four IOUs. Study recommendations were adopted in 2003, which resulted in substantially higher base rebate levels and an end to seasonal promotions. PG&E reported that participation picked up with higher rebates in late 2003.

[1] Reported in Quarterly workbooks as Sale 1.

[2] Reported in Quarterly workbooks as base amount.

[3] Reported in Quarterly workbooks as New Rebate Level.

SCE views these rebate levels as solid, effective, and firmly believes that there should be no more sales. Despite substantially higher goals in 2004, SCE reports that it is on track to meet goals and that the new rebate levels have introduced a lot of participation (particularly in thermostats and high bay lighting).[4] SCG credits its program success to increased rebates for greenhouse curtains and thermostats. PG&E continued to focus on CFLs to meet savings goals. In order to sell to small businesses, a rebate has to cover cost. PG&E would like to see higher rebates for T-8s because it is an expensive measure. Like SCE and PG&E, SDG&E relied on lighting, both CFLs and T-8s. SDG&E had mixed results promoting refrigeration in 2003. Refrigeration vendors are not interested doing in paperwork; their focus is on fixing failed refrigeration, especially in the summer.

SCE and SDG&E did not see significantly more delamping activities in late PY03 and PY04 with the increased rebate. SCE is very interested in promoting delamping.

The IOUs have managed vendor expectations about sales by explaining the new rebate levels in the kickoff meeting. According to SDG&E, vendors continue to wait for sales, despite the message that "this is a fair rebate and we're sticking with it," SCE's goal is to get away from sales. However, PG&E had a *de facto* sale in 2003, offering marketing incentive on three products to vendors in order to meet goals.

Statewide Coordination

Beginning in 2002, Express program managers meet bi-weekly to ensure that rebate levels, product specifications, sales promotions, program design (i.e. applications) and program materials were consistent across the four IOUs. Statewide consistency offers some economies of scale in promoting the program. For example, the utilities partnered with the Air Conditioning Contractors of America (ACCA) to roll out statewide program advertising in ACCA's electronic and print newsletters. However, the unique needs of each IOU, driven by different market factors and service territories, present challenges for coordination. PG&E and SDG&E depend on lighting measures to reach their goals, while SCE seeks to balance the program portfolio with measures such as HVAC. The chief challenge is consistent rebate levels. For example, SCE puts a premium on cooling rebates, which are less important in San Diego. One utility anticipates difficulty in coming to agreement on a corporate and site level cap.

Vendor Involvement

Vendors are the backbone of the Express Efficiency program (except for SCG). SCE views Express Efficiency as a direct sell program that relies on vendors. SCE relied more on email messages and updates to vendors in 2003. SCE felt that vendor kickoff meetings at the CTAC facility, where program staff review program requirements and applications, are especially valuable. SDG&E echoed the importance of the kickoff meeting, and also mentioned that letters to vendors highlighting bigger rebates, sent in October 2003, were effective. SCG conducted limited outreach to vendors, but did target vendors that install greenhouse curtains in 2003.

[4] Some measures were removed from the Express Efficiency program, such as HVAC and motors.

Program Marketing

SCE continued to do a lot of bill inserts and direct mail pieces targeted at certain customer segments, such as the hotel/motel industry or restaurants. SDG&E also used direct marketing, including a marketing piece to customers that received an energy audit, but customer response to this joint Express-audit mailer was mixed. PG&E chose not to use direct mail, citing cost and lack of response. PG&E relied on vendor outreach and account managers to promote the program. In 2003, SCG conducted Mobile Energy Workshops that promote the program in the community. SCG sent bill inserts and relied on service technicians to make customers aware of Express Efficiency. Account executives are increasingly active in promoting the program, especially greenhouse curtains and thermostats. Outbound marketing included mailings to school districts, partnering with associations and participating in trade shows. SCG drove customer and vendor traffic to a single toll free number. SCG fielded numerous calls and partnered with Laundry Association for commercial washers. As a result of this outreach a product that is not currently rebated.

Satisfaction with the Program

IOU program staff believe that vendor satisfaction is linked to rebate levels. Vendors migrate to competing programs in search of the biggest rebates available. Rebate turnaround time contributed to vendor and customer satisfaction. SCE attributed its high level of satisfaction to its quick turnaround time, noting that its processing center routinely get checks to customers within four weeks of receiving an application. Moreover, the processing center contacts the applicant to resolve any irregularities, helping to streamline the rebate turnaround process.

SDG&E pointed to its efforts to provide satisfaction in the market, such as successfully resolving customer complaints. For example, SDG&E replaced a handful of burned out lamps free or charge, regardless of warranty.

SCG found that customers were particularly satisfied with greenhouse curtains and thermostats. Some would like to participate at a higher level. There was some interest in the bulk purchase plan.

SCG noted that the reservation process is less ideal for measures that require more lead time, such as boilers. Greenhouse curtains presented a challenge in cases where a customer reserved funds and the overseas vendor was unable to deliver the measure in the promised timeframe. Since the program was so well-subscribed, funds had been exhausted and the customer was sent to the bottom of the waiting list.

Participation Eligibility Review

Program staff agree that eliminating the aggregation rule that limited large chain accounts from participating was a tremendous benefit to customers with multiple sites. Chain businesses, such as Albertson's, began participating in 2003 that were not able to participate before. Consequently, the IOUs reached the $25,000 cap on numerous Express projects. In PY2004, the cap increased to $200,000 per customer to accommodate these customers.

HTR Participation

HTR remains a challenging segment, particularly <20kW customers, because they do not have the capital assets to install in energy efficient products. However, most of the IOUs had no trouble meeting their HTR goals.

SCG reaches out to HTR customers through service calls, targeted bill inserts and advertising campaigns. SDG&E partners with different associations, such as the Asian Pacific Islander group, to promote Express Efficiency. SCE's Small Business Solutions Group has cultivated many relationships with community-based organizations and affinity groups. In addition, SCE's HTR goal is lower in 2004 because its local direct install program is targeted at HTR customers.

SCE suggested eliminating the HTR goal for Express Efficiency, noting that SCE meets its HTR goal without any special promotions. Moreover, HTR programs are increasingly implement by third parties on a regional basis. SCE recommends exiting the HTR market in light of the trend toward third party HTR programs.

Third Party Competition

IOU program staff have mixed views on the effect of third party programs on Express Efficiency. SDG&E and PG&E program staff believe that third party programs cut into Express participation because they fight for the same customers. Third party programs offered higher rebates than Express, targeted the same customer segments (e.g. PECI's grocery program and a local program offering higher boiler rebates in SCG territory), or offered a direct install approach. SCE, on the other hand, did not see a significant impact on Express participation, noting that both can successfully serve in a large market with low energy efficiency penetration. Despite different perceptions of the effects of third party competition, both SCE and PG&E program staff pointed out that the many programs that target the under 100kW market may be over-serving this "underserved" segment. In light of this portfolio of HTR programs, it may be more appropriate to eliminate the Express Efficiency's HTR goal and/or to target mid-market customers (i.e. 100-500kW).

CHANGES AND INNOVATIONS

Program managers made a variety of suggestions for improvements (program staff do not necessarily agree on these recommendations):

- Offer the same rebate for the same measure across programs to avoid customer confusion.

- Put greenhouse curtains in a local program in order to accommodate customer projects with longer lead times.

- A facility or premise cap (i.e. $50,000 cap per facility) to ensure funds are distributed evenly

- Lower rebate for greenhouse curtains. Greenhouse rebates increased significantly as a result of the Itron study. Consequently, greenhouse curtain projects quickly expended SCG's rebate budget, customers were placed on a waiting list, and the program shut down.

- Do not offer sales because there are now higher baseline rebate levels.
- Tighten up definitions of measures and eligibility in order to avoid customer confusion
- Reduce restrictions (e.g. reservations) to encourage participation because Express Efficiency is not as streamlined as it once was.

Measures under consideration:

Possibly eliminate	**Possibly add**
Cool roofs	Heat recovery
	Crucible
	Kilns
	Three-way CFLs
	Neon lighting
	Commercial washers

APPENDIX B:

PARTICIPANT DATA TABLES

2003 Participation by Technology

Utility	Technology	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	Agriculture	13	15	0.16%	$73,670	0.58%	727,867	0.26%
	Food Service	7	7	0.07%	$21,235	0.17%	31,890	0.01%
	HVAC-A/Cs	301	331	3.46%	$417,301	3.30%	730,075	0.26%
	HVAC-Other	405	380	3.97%	$394,277	3.11%	7,369,119	2.65%
	Lighting-CFL	992	1,002	10.47%	$1,304,578	10.30%	70,767,363	25.41%
	Lighting-Other	505	355	3.71%	$321,786	2.54%	4,632,770	1.66%
	Lighting-T-8/T-5, Elec Bal, Delamp	692	690	7.21%	$1,400,489	11.06%	18,206,455	6.54%
	Motors	22	23	0.24%	$3,902	0.03%	108,294	0.04%
	Refrigeration	189	132	1.38%	$356,376	2.81%	4,075,399	1.46%
	Water Heating	30	32	0.33%	$76,253	0.60%	22	0.00%
	TOTAL	2,522	2,478	25.89%	4,369,867	34.52%	106,649,254	38.30%
SCE	Agriculture	9	9	0.09%	$53,240	0.42%	618,461	0.22%
	Food Service	16	10	0.10%	$7,353	0.06%	192,970	0.07%
	HVAC-A/Cs	336	365	3.81%	$507,316	4.01%	2,830,024	1.02%
	HVAC-Other	247	275	2.87%	$187,148	1.48%	1,076,715	0.39%
	Lighting-CFL	4,539	4,837	50.53%	$1,938,637	15.31%	90,366,139	32.45%
	Lighting-Other	596	538	5.62%	$621,320	4.91%	8,274,235	2.97%
	Lighting-T-8/T-5, Elec Bal, Delamp	1,181	1,213	12.67%	$2,055,649	16.24%	24,410,937	8.77%
	Motors	4	4	0.04%	$12,745	0.10%	196,146	0.07%
	Refrigeration	52	43	0.45%	$21,625	0.17%	340,040	0.12%
	TOTAL	5,933	6,151	64.25%	5,405,033	42.69%	128,305,667	46.07%
SCG	Agriculture	43	52	0.54%	$510,554	4.03%	-	0.00%
	Food Service	31	31	0.32%	$42,360	0.33%	-	0.00%
	HVAC-Other	36	38	0.40%	$16,603	0.13%	4,567,788	1.64%
	Water Heating	205	214	2.24%	$674,286	5.33%	5,302	0.00%
	TOTAL	304	328	3.43%	1,243,803	9.82%	4,573,090	1.64%
SDG&E	Agriculture	8	8	0.08%	$117,062	0.92%	37,056	0.01%
	Food Service	1	1	0.01%	$1,920	0.02%	15,560	0.01%
	HVAC-A/Cs	57	58	0.61%	$155,973	1.23%	322,614	0.12%
	HVAC-Other	73	74	0.77%	$103,808	0.82%	1,337,611	0.48%
	Incentive Adjustment	9	9	0.09%	-$36,461	-0.29%	-	0.00%
	Lighting-CFL	264	270	2.82%	$697,831	5.51%	28,704,797	10.31%
	Lighting-Other	80	80	0.84%	$33,224	0.26%	496,294	0.18%
	Lighting-T-8/T-5, Elec Bal, Delamp	177	177	1.85%	$467,719	3.69%	7,229,405	2.60%
	Motors	4	4	0.04%	$1,992	0.02%	25,782	0.01%
	Refrigeration	45	45	0.47%	$51,445	0.41%	785,789	0.28%
	Water Heating	19	19	0.20%	$47,490	0.38%	2,382	0.00%
	TOTAL	583	616	6.43%	1,642,003	12.97%	38,957,290	13.99%
STATEWIDE	Agriculture	73	84	0.88%	754,526	5.96%	1,383,384	0.50%
	Food Processing	55	49	0.51%	72,868	0.58%	240,420	0.09%
	HVAC-A/Cs	694	754	7.88%	1,080,590	8.53%	3,882,713	1.39%
	HVAC-Other	761	767	8.01%	701,836	5.54%	14,351,233	5.15%
	Incentive Adjustment	9	9	0.09%	(36,461)	-0.29%	-	0.00%
	Lighting-CFL	5,795	6,109	63.81%	3,941,046	31.13%	189,838,299	68.17%
	Lighting-Other	1,181	973	10.16%	976,330	7.71%	13,403,299	4.81%
	Lighting-T-8/T-5, Elec Bal, Delamp	2,050	2,080	21.73%	3,923,857	30.99%	49,846,797	17.90%
	Motors	30	31	0.32%	18,639	0.15%	330,222	0.12%
	Refrigeration	286	220	2.30%	429,446	3.39%	5,201,228	1.87%
	Water Heating	254	265	2.77%	798,029	6.30%	7,706	0.00%
	TOTAL	9,342	9,573	100.00%	12,660,706	100.00%	278,485,301	100.00%

2003 Participation by Business Type

Utility	Business Type	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	Agriculture	90	93	0.97%	$360,796	2.85%	18,006,541	6.47%
	Industrial	51	58	0.61%	$109,842	0.87%	1,516,353	0.54%
	Institutional	302	322	3.36%	$635,003	5.02%	9,124,471	3.28%
	Misc. Commercial	410	453	4.73%	$754,617	5.96%	25,635,048	9.21%
	Office	361	399	4.17%	$650,589	5.14%	14,388,593	5.17%
	Other	377	241	2.52%	$532,141	4.20%	11,826,304	4.25%
	Restaurant/Grocery	310	317	3.31%	$323,144	2.55%	6,963,167	2.50%
	Retail	296	276	2.88%	$431,169	3.41%	6,049,875	2.17%
	Missing	325	345	3.60%	$572,567	4.52%	13,138,903	4.72%
	TOTAL	2,522	2,478	25.89%	$4,369,868	34.52%	106,649,255	38.30%
SCE	Agriculture	25	26	0.27%	$77,208	0.61%	3,421,430	1.23%
	Industrial	201	237	2.48%	$241,434	1.91%	2,744,488	0.99%
	Institutional	195	198	2.07%	$296,120	2.34%	6,105,062	2.19%
	Misc. Commercial	893	1,028	10.74%	$1,064,028	8.40%	32,111,458	11.53%
	Office	747	911	9.52%	$729,457	5.76%	18,841,746	6.77%
	Other	344	381	3.98%	$52,072	0.41%	1,652,722	0.59%
	Restaurant/Grocery	962	1,049	10.96%	$341,774	2.70%	9,896,901	3.55%
	Retail	938	1,072	11.20%	$555,008	4.38%	9,488,750	3.41%
	Missing	1,628	1,701	17.77%	$2,047,931	16.18%	44,043,108	15.82%
	TOTAL	5,933	6,151	64.25%	5,405,032	42.69%	128,305,665	46.07%
SCG	Agriculture	19	25	0.26%	$252,422	1.99%	-	0.00%
	Industrial	22	23	0.24%	$143,644	1.13%	4,093	0.00%
	Institutional	55	59	0.62%	$140,649	1.11%	4,314,022	1.55%
	Misc. Commercial	56	62	0.65%	$332,178	2.62%	40,930	0.01%
	Office	43	46	0.48%	$128,452	1.01%	171,906	0.06%
	Other	1	1	0.01%	$11,200	0.09%	-	0.00%
	Restaurant/Grocery	39	41	0.43%	$40,000	0.32%	12,301	0.00%
	Retail	42	43	0.45%	$98,375	0.78%	19,672	0.01%
	Missing	23	28	0.29%	$96,883	0.77%	10,166	0.00%
	TOTAL	304	328	3.43%	1,243,803	9.82%	4,573,090	1.64%
SDG&E	Agriculture	16	18	0.19%	$104,314	0.82%	992,196	0.36%
	Industrial	13	13	0.14%	$65,520	0.52%	1,023,480	0.37%
	Institutional	57	63	0.66%	$144,626	1.14%	3,895,281	1.40%
	Misc. Commercial	127	132	1.38%	$386,404	3.05%	9,510,884	3.42%
	Office	121	125	1.31%	$368,861	2.91%	10,747,948	3.86%
	Other	45	48	0.50%	$128,624	1.02%	3,150,063	1.13%
	Restaurant/Grocery	75	77	0.80%	$72,598	0.57%	1,373,175	0.49%
	Retail	74	77	0.80%	$192,092	1.52%	2,929,384	1.05%
	Missing	55	63	0.66%	$178,962	1.41%	5,334,879	1.92%
	TOTAL	583	616	6.43%	1,642,001	12.97%	38,957,290	13.99%
STATEWIDE	Agriculture	150	162	1.69%	794,740	6.28%	22,420,167	8.05%
	Industrial	287	331	3.46%	560,440	4.43%	5,288,414	1.90%
	Institutional	609	642	6.71%	1,216,398	9.61%	23,438,836	8.42%
	Misc. Commercial	1,486	1,675	17.50%	2,537,227	20.04%	67,298,320	24.17%
	Office	1,272	1,481	15.47%	1,877,359	14.83%	44,150,193	15.85%
	Other	767	671	7.01%	724,037	5.72%	16,629,089	5.97%
	Restaurant/Grocery	1,386	1,484	15.50%	777,516	6.14%	18,245,544	6.55%
	Retail	1,350	1,468	15.33%	1,276,644	10.08%	18,487,681	6.64%
	Missing	2,031	2,137	22.32%	2,896,343	22.88%	62,527,056	22.45%
	TOTAL	9,342	9,573	100.00%	12,660,704	100.00%	278,485,300	100.00%

2003 Participation by Size

Utility	Size	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	Extra Large	72	86	0.90%	$291,711	2.30%	7,973,559	3%
	Large	425	504	5.26%	$1,495,558	11.81%	32,479,523	12%
	Medium	697	583	6.09%	$1,189,067	9.39%	32,894,355	12%
	Small	999	991	10.35%	$811,960	6.41%	19,865,046	7%
	Unknown	329	349	3.65%	$581,570	4.59%	13,436,772	5%
	TOTAL	2,522	2,478	25.89%	4,369,866	34.52%	106,649,255	38%
SCE	Extra Large	22	28	0.29%	$103,144	0.81%	3,008,715	1%
	Large	525	623	6.51%	$1,727,910	13.65%	39,693,380	14%
	Medium	1,591	1,791	18.71%	$1,186,729	9.37%	31,052,975	11%
	Small	2,167	2,407	25.14%	$339,318	2.68%	10,507,488	4%
	Unknown	1,628	1,701	17.77%	$2,047,931	16.18%	44,043,108	16%
	TOTAL	5,933	6,151	64.25%	5,405,032	42.69%	128,305,666	46%
SCG	Extra Large	21	26	0.27%	$316,145	2.50%	4,093	0%
	Large	55	64	0.67%	$371,061	2.93%	94,139	0%
	Medium	108	112	1.17%	$240,605	1.90%	1,528,911	1%
	Small	76	79	0.83%	$97,740	0.77%	2,934,967	1%
	Unknown	40	47	0.49%	$218,251	1.72%	10,980	0%
	TOTAL	304	328	3.43%	1,243,802	9.82%	4,573,090	2%
SDG&E	Extra Large	8	10	0.10%	$40,826	0.32%	1,366,906	0%
	Large	114	120	1.25%	$571,951	4.52%	10,965,659	4%
	Medium	176	183	1.91%	$470,249	3.71%	11,398,588	4%
	Small	205	214	2.24%	$251,222	1.98%	6,379,870	2%
	Unknown	80	89	0.93%	$307,753	2.43%	8,846,268	3%
	TOTAL	583	616	6.43%	1,642,001	12.97%	38,957,291	14%
STATEWIDE	Extra Large	123	150	1.57%	751,826	5.94%	12,353,273	4%
	Large	1,119	1,311	13.69%	4,166,480	32.91%	83,232,701	30%
	Medium	2,572	2,669	27.88%	3,086,650	24.38%	76,874,829	28%
	Small	3,447	3,691	38.56%	1,500,240	11.85%	39,687,371	14%
	Unknown	2,077	2,186	22.84%	3,155,505	24.92%	66,337,128	24%
	TOTAL	9,342	9,573	100.00%	12,660,701	100.00%	278,485,302	100%

2002 Participation by Technology

Utility	Technology	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	Agriculture	14	14	0.15%	$64,803	0.50%	1,079,809	0.34%
	HVAC-A/Cs	140	143	1.49%	$129,485	1.01%	462,743	0.15%
	HVAC-Other	429	452	4.69%	$520,444	4.05%	12,034,424	3.78%
	Lighting-CFL	2,100	2,250	23.37%	$2,381,591	18.52%	111,380,000	34.95%
	Lighting-Other	486	424	4.40%	$284,936	2.22%	4,851,573	1.52%
	Lighting-T-8/T-5, Elec Bal, Delamp	881	947	9.84%	$1,697,890	13.20%	22,999,764	7.22%
	Motors	18	18	0.19%	$11,155	0.09%	275,381	0.09%
	Refrigeration	223	137	1.42%	$458,685	3.57%	4,314,486	1.35%
	Water Heating	19	20	0.21%	$109,734	0.85%	591	0.00%
	TOTAL	3,560	3,917	40.68%	5,658,723	44.00%	157,398,771	49.39%
SCE	Agriculture	14	14	0.15%	$70,309	0.55%	1,189,710	0.37%
	HVAC-A/Cs	221	243	2.52%	$293,214	2.28%	2,355,962	0.74%
	HVAC-Other	140	153	1.59%	$88,556	0.69%	5,365,664	1.68%
	Lighting-CFL	2,921	3,296	34.23%	$1,465,941	11.40%	87,571,166	27.48%
	Lighting-Other	253	293	3.04%	$159,994	1.24%	3,365,583	1.06%
	Lighting-T-8/T-5, Elec Bal, Delamp	1,053	1,117	11.60%	$1,168,946	9.09%	12,496,409	3.92%
	Motors	4	4	0.04%	$1,010	0.01%	25,424	0.01%
	Refrigeration	33	34	0.35%	$20,074	0.16%	394,783	0.12%
	TOTAL	3,720	4,458	46.30%	3,268,044	25.41%	112,764,701	35.38%
SCG	Agriculture	13	13	0.14%	$113,142	0.88%	-	0.00%
	Food Processing	33	33	0.34%	$62,113	0.48%	-	0.00%
	Water Heating	393	415	4.31%	$1,738,905	13.52%	5,126	0.00%
	TOTAL	438	460	4.78%	1,914,160	14.88%	5,126	0.00%
SDG&E	Agriculture	2	2	0.02%	$9,838	0.08%	2,956	0.00%
	HVAC-A/Cs	28	29	0.30%	$40,140	0.31%	81,818	0.03%
	HVAC-Other	58	62	0.64%	$56,296	0.44%	378,569	0.12%
	Incentive Adjustment	7	8	0.08%	$6,221	0.05%	-	0.00%
	Lighting-CFL	415	470	4.88%	$1,161,266	9.03%	41,601,002	13.05%
	Lighting-Other	67	71	0.74%	$45,497	0.35%	355,707	0.11%
	Lighting-T-8/T-5, Elec Bal, Delamp	193	226	2.35%	$678,365	5.27%	5,801,431	1.82%
	Refrigeration	43	44	0.46%	$4,544	0.04%	297,297	0.09%
	Reinspection Fee	6	6	0.06%	-$1,200	-0.01%	-	0.00%
	Water Heating	14	15	0.16%	$18,135	0.14%	2,184	0.00%
	TOTAL	682	793	8.24%	2,019,102	15.70%	48,520,964	15.23%
STATEWIDE	Agriculture	43	43	0.45%	258,092	2.01%	2,272,475	0.71%
	Food Processing	33	33	0.34%	62,113	0.48%	-	0.00%
	HVAC-A/Cs	389	415	4.31%	462,839	3.60%	2,900,523	0.91%
	HVAC-Other	627	667	6.93%	665,296	5.17%	17,778,657	5.58%
	Incentive Adjustment	7	8	0.08%	6,221	0.05%	-	0.00%
	Lighting-CFL	5,436	6,016	62.48%	5,008,798	38.95%	240,552,168	75.48%
	Lighting-Other	806	788	8.18%	490,427	3.81%	8,572,863	2.69%
	Lighting-T-8/T-5, Elec Bal, Delamp	2,127	2,290	23.78%	3,545,201	27.57%	41,297,604	12.96%
	Motors	22	22	0.23%	12,165	0.09%	300,805	0.09%
	Refrigeration	299	215	2.23%	483,303	3.76%	5,006,566	1.57%
	Reinspection Fee	6	6	0.06%	(1,200)	-0.01%	-	0.00%
	Water Heating	426	450	4.67%	1,866,774	14.52%	7,901	0.00%
	TOTAL	8,400	9,628	100.00%	12,860,029	100.00%	318,689,562	100.00%

2002 Participation by Business Type

Utility	Business Type	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	Agriculture	87	100	1.04%	$138,636	1.08%	3,671,446	1.15%
	Industrial	67	71	0.74%	$150,815	1.17%	3,384,487	1.06%
	Institutional	457	485	5.04%	$1,005,726	7.82%	18,737,678	5.88%
	Misc. Commercial	961	1,128	11.72%	$1,815,716	14.12%	74,385,978	23.34%
	Office	668	734	7.62%	$1,085,198	8.44%	24,151,637	7.58%
	Other	321	339	3.52%	$585,273	4.55%	14,242,839	4.47%
	Restaurant/Grocery	604	640	6.65%	$558,031	4.34%	12,683,404	3.98%
	Retail	395	420	4.36%	$319,328	2.48%	6,143,705	1.93%
	TOTAL	3,560	3,917	40.68%	$5,658,723	44.00%	157,401,174	49.39%
SCE	Agriculture	15	15	0.16%	$29,902	0.23%	506,884	0.16%
	Industrial	126	151	1.57%	$112,603	0.88%	1,894,118	0.59%
	Institutional	102	114	1.18%	$231,461	1.80%	5,549,800	1.74%
	Misc. Commercial	885	1,070	11.11%	$1,124,709	8.75%	55,804,185	17.51%
	Office	583	730	7.58%	$711,909	5.54%	17,143,502	5.38%
	Other	227	269	2.79%	$90,202	0.70%	2,091,277	0.66%
	Restaurant/Grocery	559	653	6.78%	$176,703	1.37%	7,025,217	2.20%
	Retail	569	670	6.96%	$218,429	1.70%	3,850,173	1.21%
	Missing	654	786	8.16%	$572,125	4.45%	18,899,545	5.93%
	TOTAL	3,720	4,458	46.30%	3,268,043	25.41%	112,764,701	35.38%
SCG	Agriculture	9	9	0.09%	$64,977	0.51%	-	0.00%
	Industrial	37	38	0.39%	$210,540	1.64%	-	0.00%
	Institutional	78	86	0.89%	$360,621	2.80%	190	0.00%
	Misc. Commercial	91	97	1.01%	$546,294	4.25%	-	0.00%
	Office	114	114	1.18%	$471,603	3.67%	-	0.00%
	Other	1	3	0.03%	$12,360	0.10%	-	0.00%
	Restaurant/Grocery	45	45	0.47%	$86,361	0.67%	-	0.00%
	Retail	63	68	0.71%	$161,404	1.26%	4,936	0.00%
	TOTAL	438	460	4.78%	1,914,160	14.88%	5,126	0.00%
SDG&E	Agriculture	20	22	0.23%	$79,778	0.62%	2,172,306	0.68%
	Industrial	26	27	0.28%	$97,249	0.76%	781,762	0.25%
	Institutional	86	88	0.91%	$262,286	2.04%	6,872,743	2.16%
	Misc. Commercial	206	222	2.31%	$679,009	5.28%	20,291,656	6.37%
	Office	195	209	2.17%	$506,650	3.94%	11,724,418	3.68%
	Other	13	14	0.15%	$27,051	0.21%	603,153	0.19%
	Restaurant/Grocery	35	36	0.37%	$37,028	0.29%	1,002,134	0.31%
	Retail	100	103	1.07%	$146,903	1.14%	1,670,539	0.52%
	Missing	1	72	0.75%	$183,148	1.42%	3,402,254	1.07%
	TOTAL	682	793	8.24%	2,019,102	15.70%	48,520,965	15.23%
STATEWIDE	Agriculture	131	146	1.52%	313,293	2.44%	6,350,636	1.99%
	Industrial	256	287	2.98%	571,207	4.44%	6,060,367	1.90%
	Institutional	723	773	8.03%	1,860,094	14.46%	31,160,411	9.78%
	Misc. Commercial	2,143	2,517	26.14%	4,165,728	32.39%	150,481,819	47.22%
	Office	1,560	1,787	18.56%	2,775,360	21.58%	53,019,557	16.64%
	Other	562	625	6.49%	714,886	5.56%	16,937,269	5.31%
	Restaurant/Grocery	1,243	1,374	14.27%	858,123	6.67%	20,710,755	6.50%
	Retail	1,127	1,261	13.10%	846,064	6.58%	11,669,353	3.66%
	Missing	655	858	8.91%	755,273	5.87%	22,301,799	7.00%
	TOTAL	8,400	9,628	100.00%	12,860,028	100.00%	318,691,966	100.00%

2002 Participation by Size

Utility	Size	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	Extra Large	122	152	1.58%	$682,973	5.31%	15,738,706	5%
	Large	559	624	6.48%	$1,702,089	13.24%	45,757,955	14%
	Medium	998	1,048	10.88%	$1,388,061	10.80%	37,239,505	12%
	Small	1,879	2,060	21.40%	$1,755,277	13.65%	56,391,993	18%
	Unknown	2	67	0.70%	$130,323	1.01%	2,273,015	1%
	TOTAL	3,560	3,917	40.68%	5,658,723	44.02%	157,401,174	49%
SCE	Extra Large	4	4	0.04%	$33,590	0.26%	337,255	0%
	Large	352	480	4.99%	$1,210,451	9.42%	39,689,564	12%
	Medium	1,190	1,409	14.63%	$1,024,940	7.97%	41,629,499	13%
	Small	1,520	1,780	18.49%	$426,937	3.32%	12,208,838	4%
	Unknown	654	786	8.16%	$572,125	4.45%	18,899,545	6%
	TOTAL	3,720	4,458	46.30%	3,268,043	25.42%	112,764,701	35%
SCG	Extra Large	17	18	0.19%	$151,064	1.18%	-	0%
	Large	96	101	1.05%	$687,636	5.35%	190	0%
	Medium	200	208	2.16%	$681,542	5.30%	2,634	0%
	Small	116	122	1.27%	$330,318	2.57%	2,302	0%
	Unknown	9	9	0.09%	$59,240	0.46%	-	0%
	TOTAL	438	460	4.78%	1,909,800	14.86%	5,126	0%
SDG&E	Extra Large	2	2	0.02%	$3,798	0.03%	227,402	0%
	Large	152	167	1.73%	$734,937	5.72%	21,659,703	7%
	Medium	231	246	2.56%	$650,115	5.06%	16,662,591	5%
	Small	291	302	3.14%	$438,154	3.41%	6,353,209	2%
	Unknown	6	77	0.80%	$192,099	1.49%	3,618,059	1%
	TOTAL	682	793	8.24%	2,019,103	15.71%	48,520,964	15%
STATEWIDE	Extra Large	145	176	1.83%	871,425	6.78%	16,303,363	5%
	Large	1,159	1,372	14.25%	4,335,113	33.72%	107,107,412	34%
	Medium	2,619	2,911	30.23%	3,744,658	29.13%	95,534,229	30%
	Small	3,806	4,264	44.29%	2,950,686	22.95%	74,956,342	24%
	Unknown	671	939	9.75%	953,787	7.42%	24,790,619	8%
	TOTAL	8,400	9,628	100.00%	12,855,669	100.00%	318,691,965	100%

2001 Participation by Technology

Utility	Technology	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	Agriculture	120	81	0.73%	$1,422,160	4.60%	6,050,996	1.30%
	HVAC-A/Cs	540	172	1.55%	$2,293,229	7.41%	8,193,852	1.75%
	HVAC-Other	603	649	5.86%	$1,386,775	4.48%	23,149,302	4.96%
	Lighting-Bonus	1,383	1,481	13.38%	$1,555,674	5.03%	-	0.00%
	Lighting-CFL	3,526	3,775	34.10%	$4,527,931	14.64%	153,440,000	32.85%
	Lighting-Other	2,444	2,601	23.49%	$3,051,009	9.86%	26,296,008	5.63%
	Lighting-T-8/T-5, Elec Bal, Delamp	3,416	3,675	33.19%	$7,983,104	25.81%	74,388,615	15.93%
	Motors	598	98	0.89%	$142,675	0.46%	1,608,259	0.34%
	Refrigeration	143	145	1.31%	$742,254	2.40%	10,833,044	2.32%
	Refrigeration-Bonus	4	4	0.04%	$24,941	0.08%	-	0.00%
	Water Heating	27	28	0.25%	$68,853	0.22%	544,050	0.12%
	TOTAL	7,254	7,203	65.06%	23,198,605	75.00%	304,504,126	65.19%
SCE	Agriculture	9	9	0.08%	$44,132	0.14%	734	0.00%
	HVAC-A/Cs	436	466	4.21%	$473,698	1.53%	3,767,324	0.81%
	HVAC-Other	317	349	3.15%	$436,460	1.41%	13,728,101	2.94%
	Lighting-CFL	623	707	6.39%	$694,452	2.25%	38,639,419	8.27%
	Lighting-Other	649	717	6.48%	$1,701,016	5.50%	40,860,284	8.75%
	Lighting-T-8/T-5, Elec Bal, Delamp	373	417	3.77%	$516,911	1.67%	3,269,417	0.70%
	Refrigeration	41	41	0.37%	$146,458	0.47%	3,778,023	0.81%
	TOTAL	1,863	2,123	19.17%	4,013,127	12.97%	104,043,302	22.27%
SCG	Agriculture	2	2	0.02%	$600	0.00%	-	0.00%
	HVAC-A/Cs	21	25	0.23%	$55,553	0.18%	58,298	0.01%
	HVAC-Other	88	100	0.90%	$21,215	0.07%	266,038	0.06%
	Incentive Adjustment	9	9	0.08%	-$36,309	-0.12%	-	0.00%
	Lighting-CFL	331	352	3.18%	$305,402	0.99%	11,113,499	2.38%
	Lighting-Other	173	177	1.60%	$182,452	0.59%	879,698	0.19%
	Lighting-T-8/T-5, Elec Bal, Delamp	511	534	4.82%	$1,242,204	4.02%	17,401,128	3.73%
	Refrigeration	8	8	0.07%	$86,627	0.28%	452,797	0.10%
	Reinspection Fee	1	1	0.01%	-$100	0.00%	-	0.00%
	Water Heating	5	5	0.05%	$1,864	0.01%	-	0.00%
	TOTAL	764	868	7.84%	1,859,508	6.01%	30,171,458	6.46%
SDG&E	Agriculture	8	10	0.09%	$107,372	0.35%	-	0.00%
	HVAC-A/Cs	20	24	0.22%	$55,553	0.18%	36,355	0.01%
	HVAC-Other	95	98	0.89%	$21,415	0.07%	266,038	0.06%
	Incentive Adjustment	9	9	0.08%	-$36,309	-0.12%	-	0.00%
	Lighting-CFL	335	348	3.14%	$305,402	0.99%	10,422,330	2.23%
	Lighting-Other	170	171	1.54%	$165,535	0.54%	1,145,322	0.25%
	Lighting-T-8/T-5, Elec Bal, Delamp	521	493	4.45%	$1,152,349	3.73%	16,044,421	3.44%
	Refrigeration	10	10	0.09%	$86,927	0.28%	452,797	0.10%
	Reinspection Fee	1	1	0.01%	-$100	0.00%	-	0.00%
	Water Heating	4	5	0.05%	$2,150	0.01%	-	0.00%
	TOTAL	800	878	7.93%	1,860,294	6.01%	28,367,263	6.07%
STATEWIDE	Agriculture	139	102	0.92%	1,574,264	5.09%	6,051,730	1.30%
	HVAC-A/Cs	1,017	687	6.20%	2,878,033	9.30%	12,055,829	2.58%
	HVAC-Other	1,103	1,196	10.80%	1,865,865	6.03%	37,409,479	8.01%
	Incentive Adjustment	18	18	0.16%	(72,618)	-0.23%	-	0.00%
	Lighting-Bonus	1,383	1,481	13.38%	1,555,674		-	
	Lighting-CFL	4,815	5,182	46.80%	5,833,187	18.86%	213,615,248	45.73%
	Lighting-Other	3,436	3,666	33.11%	5,100,012	16.49%	69,181,312	14.81%
	Lighting-T-8/T-5, Elec Bal, Delamp	4,821	5,119	46.23%	10,894,568	35.22%	111,103,581	23.79%
	Motors	598	98	0.89%	142,675	0.46%	1,608,259	0.34%
	Refrigeration	202	204	1.84%	1,062,266	3.43%	15,516,661	3.32%
	Refrigeration-Bonus	4	4	0.04%	24,941		-	
	Reinspection Fee	2	2	0.02%	(200)	0.00%	-	0.00%
	Water Heating	36	38	0.34%	72,867	0.24%	544,050	0.12%
	TOTAL	10,681	11,072	100.00%	30,931,534	100.00%	467,086,149	100.00%

2001 Participation by Business Type

Utility	Business Type	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	Agriculture	248	178	1.61%	$1,770,071	5.72%	11,466,329	2.45%
	Industrial	541	401	3.62%	$1,060,162	3.43%	16,431,833	3.52%
	Institutional	692	712	6.43%	$3,015,832	9.75%	28,331,791	6.07%
	Misc. Commercial	1,263	1,360	12.28%	$4,634,837	14.98%	110,430,000	23.64%
	Office	1,475	1,609	14.53%	$5,114,014	16.53%	68,726,402	14.71%
	Other	781	599	5.41%	$4,053,069	13.10%	21,511,503	4.61%
	Restaurant/Grocery	1,125	1,181	10.67%	$1,586,245	5.13%	25,498,575	5.46%
	Retail	1,129	1,163	10.50%	$1,964,373	6.35%	22,108,648	4.73%
	TOTAL	7,254	7,203	65.06%	$23,198,603	75.00%	304,505,081	65.19%
SCE	Agriculture	21	21	0.19%	$40,739	0.13%	300,045	0.06%
	Industrial	137	150	1.35%	$521,547	1.69%	13,138,664	2.81%
	Institutional	87	102	0.92%	$424,746	1.37%	11,159,808	2.39%
	Misc. Commercial	333	388	3.50%	$862,775	2.79%	31,958,638	6.84%
	Office	431	534	4.82%	$1,019,779	3.30%	20,689,446	4.43%
	Other	57	74	0.67%	$84,814	0.27%	2,462,544	0.53%
	Restaurant/Grocery	346	357	3.22%	$296,778	0.96%	6,018,551	1.29%
	Retail	209	224	2.02%	$260,713	0.84%	4,140,265	0.89%
	Missing	242	273	2.47%	$501,237	1.62%	14,175,341	3.03%
	TOTAL	1,863	2,123	19.17%	4,013,128	12.97%	104,043,302	22.27%
SCG	Industrial	6	6	0.05%	$9,189	0.03%	206,229	0.04%
	Misc. Commercial	12	13	0.12%	$37,181	0.12%	1,114,625	0.24%
	Office	108	114	1.03%	$202,640	0.66%	2,944,072	0.63%
	Other	11	11	0.10%	$41,711	0.13%	339,839	0.07%
	Restaurant/Grocery	54	78	0.70%	$13,919	0.04%	432,453	0.09%
	Retail	61	66	0.60%	$152,487	0.49%	3,020,119	0.65%
	Missing	512	580	5.24%	$1,402,383	4.53%	22,114,123	4.73%
	TOTAL	764	868	7.84%	1,859,510	6.01%	30,171,460	6.46%
SDG&E	Agriculture	4	6	0.05%	$25,650	0.08%	10,440	0.00%
	Industrial	37	46	0.42%	$75,337	0.24%	1,159,982	0.25%
	Institutional	26	31	0.28%	$109,988	0.36%	2,049,378	0.44%
	Misc. Commercial	102	127	1.15%	$277,896	0.90%	5,636,176	1.21%
	Office	292	273	2.47%	$531,618	1.72%	7,731,648	1.66%
	Other	8	8	0.07%	$28,396	0.09%	280,317	0.06%
	Restaurant/Grocery	91	114	1.03%	$269,342	0.87%	2,679,202	0.57%
	Retail	94	87	0.79%	$204,096	0.66%	3,385,076	0.72%
	Missing	146	186	1.68%	$337,972	1.09%	5,435,045	1.16%
	TOTAL	800	878	7.93%	1,860,295	6.01%	28,367,264	6.07%
STATEWIDE	Agriculture	273	205	1.85%	$1,836,460	5.94%	11,776,814	2.52%
	Industrial	721	603	5.45%	$1,666,235	5.39%	30,936,708	6.62%
	Institutional	805	845	7.63%	$3,550,566	11.48%	41,540,977	8.89%
	Misc. Commercial	1,710	1,888	17.05%	$5,812,689	18.79%	149,139,439	31.93%
	Office	2,306	2,530	22.85%	$6,868,051	22.20%	100,091,568	21.43%
	Other	857	692	6.25%	$4,207,990	13.60%	24,594,203	5.27%
	Restaurant/Grocery	1,616	1,730	15.63%	$2,166,284	7.00%	34,628,781	7.41%
	Retail	1,493	1,540	13.91%	$2,581,669	8.35%	32,654,108	6.99%
	Missing	900	1,039	9.38%	$2,241,592	7.25%	41,724,509	8.93%
	TOTAL	10,681	11,072	100.00%	$30,931,536	100.00%	467,087,107	100.00%

2001 Participation by Size

Utility	Size	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	Extra Large	1,105	1,222	11.04%	$8,007,160	25.89%	134,050,000	29%
	Large	861	950	8.58%	$5,172,912	16.73%	59,889,320	13%
	Medium	1,724	1,811	16.36%	$4,370,920	14.13%	51,279,435	11%
	Small	3,322	3,436	31.03%	$4,269,282	13.80%	51,996,816	11%
	Unknown	242	233	2.10%	$1,378,329	4.46%	7,285,971	2%
	TOTAL	7,254	7,203	65.06%	23,198,603	75.01%	304,501,542	65%
SCE	Extra Large	184	228	2.06%	$1,644,067	5.32%	51,876,187	11%
	Large	447	525	4.74%	$1,165,571	3.77%	24,978,976	5%
	Medium	663	726	6.56%	$566,098	1.83%	10,964,047	2%
	Small	327	371	3.35%	$136,155	0.44%	2,048,751	0%
	Unknown	242	273	2.47%	$501,237	1.62%	14,175,341	3%
	TOTAL	1,863	2,123	19.17%	4,013,128	12.98%	104,043,302	22%
SCG	Extra Large	-	-	0.00%	$0	0.00%	-	0%
	Large	1	1	0.01%	$14,070	0.05%	563,723	0%
	Medium	37	46	0.42%	$66,388	0.21%	1,394,218	0%
	Small	174	182	1.64%	$318,993	1.03%	5,180,557	1%
	Unknown	552	639	5.77%	$1,460,057	4.72%	23,032,962	5%
	TOTAL	764	868	7.84%	1,859,508	6.01%	30,171,460	6%
SDG&E	Extra Large	2	2	0.02%	$15,902	0.05%	156,066	0%
	Large	133	199	1.80%	$755,521	2.44%	12,583,661	3%
	Medium	221	284	2.57%	$460,904	1.49%	6,521,786	1%
	Small	296	357	3.22%	$286,220	0.93%	3,623,697	1%
	Unknown	148	190	1.72%	$337,972	1.09%	5,435,045	1%
	TOTAL	800	878	7.93%	1,856,519	6.00%	28,320,255	6%
STATEWIDE	Extra Large	1,291	1,452	13.11%	9,667,129	31.26%	186,082,253	40%
	Large	1,442	1,675	15.13%	7,108,074	22.98%	98,015,680	21%
	Medium	2,645	2,867	25.89%	5,464,310	17.67%	70,159,486	15%
	Small	4,119	4,346	39.25%	5,010,650	16.20%	62,849,821	13%
	Unknown	1,184	1,335	12.06%	3,677,595	11.89%	49,929,319	11%
	TOTAL	10,681	11,072	100.00%	30,927,758	100.00%	467,036,559	100%

2000 Participation by Technology

Utility	Technology	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	HVAC-A/Cs	465	165	0.60%	$2,253,534	7.88%	7,654,107	2.58%
	HVAC-Bonus	130	142	0.51%	$164,539	0.58%	-	0.00%
	HVAC-Other	491	512	1.85%	$876,265	3.06%	10,096,186	3.40%
	Lighting-Bonus	16,920	17,715	64.17%	$3,863,523	13.51%	-	0.00%
	Lighting-CFL	11,584	13,237	47.95%	$7,068,942	24.72%	163,210,000	55.00%
	Lighting-Other	726	762	2.76%	$340,522	1.19%	8,410,272	2.83%
	Lighting-T-8/T-5, Elec Bal, Delamp	10,903	11,303	40.94%	$6,280,782	21.96%	46,071,658	15.53%
	Motors	664	114	0.41%	$285,615	1.00%	2,023,008	0.68%
	Motors-Bonus	1	27	0.10%	$113,000	0.40%	-	0.00%
	Refrigeration	136	142	0.51%	$187,016	0.65%	6,116,692	2.06%
	Refrigeration-Bonus	32	32	0.12%	$4,381	0.02%	-	0.00%
	Water Heating	16	16	0.06%	$4,292	0.02%	-	0.00%
	TOTAL	22,310	23,990	86.90%	21,442,411	74.97%	243,581,923	82.09%
SCE	HVAC-Other	97	108	0.39%	$262,587	0.92%	1,230,986	0.41%
	Lighting-CFL	525	569	2.06%	$1,332,294	4.66%	30,497,447	10.28%
	Lighting-Other	96	120	0.43%	$55,981	0.20%	1,406,028	0.47%
	Lighting-T-8/T-5, Elec Bal, Delamp	186	206	0.75%	$433,884	1.52%	2,063,438	0.70%
	Refrigeration	7	7	0.03%	$1,235	0.00%	56,835	0.02%
	Unknown	125	129	0.47%	$154	0.00%	2,267	0.00%
	TOTAL	834	996	3.61%	2,086,135	7.29%	35,257,001	11.88%
SCG	HVAC-Other	19	23	0.08%	$63,182	0.22%	.	-
	Water Heating	378	390	1.41%	$362,885	1.27%	.	-
	TOTAL	392	411	1.49%	426,067	1.49%	-	0.00%
SDG&E	HVAC-Other	21	21	0.08%	$99,030	0.35%	159,959	0.05%
	Incentive Adjustment	33	33	0.12%	.	-	-	0.00%
	Lighting-CFL	59	59	0.21%	$34,315	0.12%	1,043,259	0.35%
	Lighting-Other	13	13	0.05%	$1,627	0.01%	48,935	0.02%
	Lighting-T-8/T-5, Elec Bal, Delamp	2,152	2,152	7.80%	$4,515,735	15.79%	16,628,258	5.60%
	Refrigeration	4	4	0.01%	$1,700	0.01%	18,853	0.01%
	Reinspection Fee	54	54	0.20%	-$6,200	-0.02%	-	0.00%
	Water Heating	3	3	0.01%	$243	0.00%	-	0.00%
	TOTAL	2,209	2,209	8.00%	4,646,450	16.25%	17,899,264	6.03%
STATEWIDE	HVAC-A/Cs	465	165	0.60%	2,253,534	7.88%	7,654,107	2.58%
	HVAC-Bonus	130	142	0.51%	164,539		-	
	HVAC-Other	628	664	2.41%	1,301,064	4.55%	11,487,131	3.87%
	Incentive Adjustment	33	33	0.12%	-	0.00%	-	0.00%
	Lighting-Bonus	16,920	17,715	64.17%	3,863,523		-	
	Lighting-CFL	12,168	13,865	50.22%	8,435,551	29.49%	194,750,706	65.63%
	Lighting-Other	835	895	3.24%	398,130	1.39%	9,865,235	3.32%
	Lighting-T-8/T-5, Elec Bal, Delamp	13,241	13,661	49.49%	11,230,401	39.27%	64,763,354	21.83%
	Motors	664	114	0.41%	285,615	1.00%	2,023,008	0.68%
	Motors-Bonus	1	27	0.10%	113,000		-	
	Refrigeration	147	153	0.55%	189,951	0.66%	6,192,380	2.09%
	Refrigeration-Bonus	32	32	0.12%	4,381		-	
	Reinspection Fee	54	54	0.20%	(6,200)	-0.02%	-	0.00%
	Water Heating	397	409	1.48%	367,420	1.28%	-	0.00%
	Unknown	125	129	0.47%	154	0.00%	2,267	0.00%
	TOTAL	25,745	27,606	100.00%	28,601,063	100.00%	296,738,188	100.00%

2000 Participation by Business Type

Utility	Business Type	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	Agriculture	254	215	0.78%	$191,243	0.67%	5,029,051	1.69%
	Industrial	1,160	1,026	3.72%	$826,619	2.89%	8,381,777	2.82%
	Institutional	488	445	1.61%	$1,765,996	6.17%	14,191,440	4.78%
	Misc. Commercial	3,817	4,072	14.75%	$5,503,960	19.24%	92,308,453	31.11%
	Office	3,815	4,056	14.69%	$3,951,244	13.82%	45,107,534	15.20%
	Other	691	563	2.04%	$2,223,972	7.78%	10,266,969	3.46%
	Restaurant/Grocery	4,321	5,041	18.26%	$2,538,819	8.88%	34,610,715	11.66%
	Retail	7,764	8,572	31.05%	$4,440,559	15.53%	33,686,025	11.35%
	TOTAL	22,310	23,990	86.90%	$21,442,412	74.97%	243,581,964	82.09%
SCE	Agriculture	2	3	0.01%	$3,361	0.01%	37,203	0.01%
	Industrial	12	12	0.04%	$46,855	0.16%	146,142	0.05%
	Institutional	8	9	0.03%	$32,137	0.11%	696,539	0.23%
	Misc. Commercial	237	284	1.03%	$713,628	2.50%	14,416,800	4.86%
	Office	90	100	0.36%	$157,878	0.55%	1,753,881	0.59%
	Other	425	522	1.89%	$1,033,398	3.61%	17,464,165	5.89%
	Restaurant/Grocery	24	28	0.10%	$60,381	0.21%	517,349	0.17%
	Retail	36	38	0.14%	$38,497	0.13%	224,922	0.08%
	TOTAL	834	996	3.61%	$2,086,135	7.29%	35,257,001	11.88%
SCG	Agriculture	1	1	0.00%	$750	0.00%	.	-
	Industrial	5	5	0.02%	$3,624	0.01%	.	-
	Institutional	34	40	0.14%	$87,406	0.31%	.	-
	Misc. Commercial	68	73	0.26%	$111,893	0.39%	.	-
	Office	25	29	0.11%	$58,937	0.21%	.	-
	Other	2	2	0.01%	$1,000	0.00%	.	-
	Restaurant/Grocery	233	236	0.85%	$141,989	0.50%	.	-
	Retail	24	25	0.09%	$20,468	0.07%	.	-
	TOTAL	392	411	1.49%	$425,317	1.49%	-	0.00%
SDG&E	Agriculture	18	18	0.07%	$29,188	0.10%	109,901	0.04%
	Industrial	177	177	0.64%	$360,575	1.26%	1,398,805	0.47%
	Institutional	40	40	0.14%	$197,363	0.69%	846,723	0.29%
	Misc. Commercial	283	283	1.03%	$624,820	2.18%	2,182,897	0.74%
	Office	579	579	2.10%	$1,862,045	6.51%	6,680,683	2.25%
	Other	280	280	1.01%	$323,419	1.13%	1,248,704	0.42%
	Restaurant/Grocery	185	185	0.67%	$239,882	0.84%	1,150,169	0.39%
	Retail	647	647	2.34%	$1,009,159	3.53%	4,281,383	1.44%
	TOTAL	2,209	2,209	8.00%	$4,646,451	16.25%	17,899,265	6.03%
STATEWIDE	Agriculture	275	237	0.86%	$224,542	0.79%	5,176,155	1.74%
	Industrial	1,354	1,220	4.42%	$1,237,673	4.33%	9,926,724	3.35%
	Institutional	570	534	1.93%	$2,082,902	7.28%	15,734,702	5.30%
	Misc. Commercial	4,405	4,712	17.07%	$6,954,301	24.31%	108,908,150	36.70%
	Office	4,509	4,764	17.26%	$6,030,104	21.08%	53,542,098	18.04%
	Other	1,398	1,367	4.95%	$3,581,789	12.52%	28,979,838	9.77%
	Restaurant/Grocery	4,763	5,490	19.89%	$2,981,071	10.42%	36,278,233	12.23%
	Retail	8,471	9,282	33.62%	$5,508,683	19.26%	38,192,330	12.87%
	TOTAL	25,745	27,606	100.00%	$28,601,065	100.00%	296,738,230	100.00%

2000 Participation by Size

Utility	Size	Customers			Rebate		Energy Savings	
		Unique Sites	Applications	Pct of Program	Dollars	Pct of Program	kWh	Pct of Program
PG&E	Extra Large	582	520	1.88%	$1,852,457	6.48%	37,731,073	13%
	Large	170	198	0.72%	$548,563	1.92%	11,129,200	4%
	Medium	1,545	1,521	5.51%	$2,942,862	10.29%	47,382,029	16%
	Small	19,468	21,588	78.20%	$14,129,335	49.40%	135,770,000	46%
	Unknown	545	563	2.04%	$1,969,194	6.89%	11,574,060	4%
	TOTAL	22,310	23,990	86.90%	21,442,411	74.97%	243,586,362	82%
SCE	Extra Large	3	3	0.01%	$2,883	0.01%	8,800	0%
	Large	51	62	0.22%	$299,987	1.05%	4,743,848	2%
	Medium	511	615	2.23%	$1,516,650	5.30%	26,575,939	9%
	Small	269	316	1.14%	$266,616	0.93%	3,928,414	1%
	Unknown	-	-	0.00%	$0	0.00%	-	0%
	TOTAL	834	996	3.61%	2,086,136	7.29%	35,257,001	12%
SCG	Extra Large	4	4	0.01%	$13,428	0.05%	.	-
	Large	30	37	0.13%	$84,933	0.30%	.	-
	Medium	189	198	0.72%	$189,233	0.66%	.	-
	Small	146	148	0.54%	$95,461	0.33%	.	-
	Unknown	23	24	0.09%	$43,012	0.15%	.	-
	TOTAL	392	411	1.49%	426,067	1.49%	-	0%
SDG&E	Extra Large	3	3	0.01%	$4,848	0.02%	13,316	0%
	Large	21	21	0.08%	$179,227	0.63%	987,929	0%
	Medium	646	646	2.34%	$2,119,874	7.41%	7,823,866	3%
	Small	1,539	1,539	5.57%	$2,342,502	8.19%	9,074,153	3%
	Unknown	-	-	0.00%	$0	0.00%	-	0%
	TOTAL	2,209	2,209	8.00%	4,646,451	16.25%	17,899,264	6%
STATEWIDE	Extra Large	592	530	1.92%	1,873,616	6.55%	37,753,189	13%
	Large	272	318	1.15%	1,112,710	3.89%	16,860,977	6%
	Medium	2,891	2,980	10.79%	6,768,619	23.67%	81,781,834	28%
	Small	21,422	23,591	85.46%	16,833,914	58.86%	148,772,567	50%
	Unknown	568	587	2.13%	2,012,206	7.04%	11,574,060	4%
	TOTAL	25,745	27,606	100.00%	28,601,065	100.00%	296,742,627	100%

APPENDIX C:

PROCESS ASSESSMENT DATA TABLES

Guide to Participant Data Tables (Appendices C-E)

Participating Customer Survey

Participant data is segmented as follows:

- **Total**: Overall self-report customer data
- **Size of Business**. Size is defined by energy usage.: Very small businesses (using <20kw or less), 20-100kw, 100-500kw, based on CIS data
- **Renter/owner.** This information comes from self-reported information on whether the respondent leases their business space.
- **English/other language**. Primary languages other than English includes respondents who indicated they spoke a non-English language at their business.
- **Urban/rural**. Customer were defined as urban or rural by their zip code.
- **Any HTR/non-HTR**: The "Any HTR" segment includes respondents in rural areas, speak a language other than English, lease their business space
- **Business Type**: Survey responses are segmented by seven business types: office, retail, restaurant and grocery, institutional, industrial, miscellaneous commercial and agriculture.
- **IOUs**: Survey responses were segmented by IOU service territory. 183 PG&E participants, 211 SCE participants, 53 SCG participants, and 95 SDG&E participants were interviewed.
- **CFL purchaser/non purchaser**: CFL purchasers, identified in the IOU participant database.

Exhibit C-1
Awareness of Utility Programs

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
A30. How did you first learn about the 2003 Express Efficiency program?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Business Energy Audits	1	0	0	2	0	1	1	1	0	1	0	1	0	1	0	0	0	2	0	0	2	0	2	0	1
Respondent approached utility about another matter	2	1	2	3	1	3	2	2	3	1	1	3	3	0	0	0	8	2	0	2	9	1	2	1	3
Contacted by utility rep	18	15	15	34	17	18	16	19	15	21	16	22	23	16	19	41	23	15	10	14	14	19	46	18	19
Contractor/vendor	33	30	32	45	35	31	42	30	31	34	37	26	35	40	38	13	21	34	18	49	33	25	20	31	35
Utility brochure in mail	12	14	16	1	17	9	6	15	12	13	13	11	11	12	16	19	5	11	1	9	11	15	7	10	15
Bill insert	3	2	5	1	4	3	2	3	4	3	3	3	3	3	7	1	0	3	1	3	6	3	7	2	4
Word-of-mouth	13	12	15	13	11	15	12	13	15	11	12	15	13	14	11	20	10	12	15	14	13	13	6	13	13
Television/radio/newpaper ad	8	11	7	2	10	7	7	8	9	8	9	6	1	8	12	0	29	7	0	1	4	12	0	11	5
Magazine or trade journal	1	1	0	0	0	1	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	1	0	1	0
Participation in previous years	5	6	4	7	3	8	6	5	10	2	4	7	2	6	7	1	0	11	34	4	9	6	0	3	8
Manufacturer info/suggestion	1	1	1	1	1	2	3	1	1	1	2	0	0	2	0	0	0	2	4	3	0	0	4	0	2
Community organization	2	3	2	0	2	2	0	3	2	2	1	3	0	3	0	0	0	2	0	0	1	3	2	3	1
Seminar	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	3	0	0	0	0
Utility website	2	2	1	4	1	3	0	3	3	1	1	4	3	2	2	5	0	0	15	4	2	1	3	1	3
Store where equipment was purchased	1	2	2	0	1	2	4	1	1	2	2	1	1	0	1	0	0	5	0	4	0	0	0	1	2
Other	3	4	4	1	5	2	6	2	4	2	4	2	6	1	3	0	14	1	0	1	3	4	4	5	1
Don't know	2	3	2	0	3	1	1	3	2	2	2	2	3	3	2	0	0	3	1	2	1	3	0	4	1
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-2
Vendor Importance

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
V40. How important was the input from the contractor you worked with in deciding which specific equipment to install?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very important	63	68	55	68	65	62	68	61	67	59	67	56	57	64	60	55	71	69	99	61	51	69	52	70	60
Somewhat important	17	13	21	17	13	21	15	18	13	21	15	22	23	10	15	39	10	16	1	21	22	13	18	14	18
Not at all important	16	13	23	9	16	15	16	16	17	15	15	19	18	21	19	6	19	15	0	13	27	15	30	16	16
Don't know	4	6	0	6	6	2	1	5	3	4	4	3	2	5	6	0	0	0	0	5	0	3	0	0	5
N	268	106	97	41	121	137	78	190	129	139	171	97	66	50	40	14	14	39	8	100	50	81	37	101	167

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-3
Utility Representative Outreach

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
A80. Did your utility rep discuss Express Efficiency rebates with you?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Yes	42	38	41	53	36	46	35	44	40	43	36	51	47	32	34	56	63	44	66	31	43	46	68	44	39
No	48	52	44	43	52	45	57	45	47	49	54	38	44	60	60	25	22	45	33	63	47	42	27	46	50
Don't know	10	10	14	3	11	9	8	11	13	8	9	12	9	8	6	19	14	11	1	6	10	12	6	9	11
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-4
Influence on Purchase

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
A130a. How influential was the Express Efficiency program on your decision to purchase the rebated equipment?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very influential	66	68	63	74	68	65	64	67	64	68	68	63	66	70	65	65	70	71	71	62	59	70	48	69	63
Somewhat influential	25	25	29	17	23	28	27	25	30	22	24	28	26	22	30	21	23	23	28	30	26	22	43	22	29
Not at all influential	6	6	6	6	6	6	3	7	4	7	5	7	8	1	4	14	2	4	1	5	12	6	10	6	6
Refused/don't know	2	2	3	4	3	1	5	1	2	3	3	1	0	7	1	0	5	2	0	3	3	2	0	3	2
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-5
Influence of Contractor

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
A130b. How influential was your contractor on your decision to purchase the rebated equipment?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very influential	55	61	48	53	52	59	64	51	62	49	58	50	52	57	53	21	53	65	99	49	50	62	54	67	50
Somewhat influential	28	22	33	33	30	27	21	31	21	34	27	30	31	27	31	26	28	22	0	32	31	24	24	21	31
Not at all influential	16	16	17	14	17	14	13	17	16	16	14	20	16	16	17	53	19	12	1	17	19	14	22	12	18
Don't know	1	1	1	0	1	0	1	1	1	1	1	0	2	0	0	0	0	0	0	2	0	0	0	0	1
N	268	106	97	41	121	137	78	190	129	139	171	97	66	50	40	14	14	39	8	100	50	81	37	101	167

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-6
Influence of Utility Representative

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
A130c. How influential was your utility representative on your decision to purchase the rebated equipment?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very influential	66	67	63	69	69	63	86	59	69	64	74	56	52	65	62	64	56	70	87	67	70	64	66	63	68
Somewhat influential	21	18	23	23	16	25	7	26	16	25	14	30	26	19	27	24	38	17	11	16	14	24	19	26	15
Not at all influential	11	13	14	4	13	11	7	13	13	10	10	12	22	9	9	0	6	13	2	16	13	9	15	7	16
Don't know	2	2	1	4	2	2	0	2	3	1	2	2	0	7	1	12	0	0	0	0	3	3	0	4	0
N	189	66	72	36	72	108	51	138	71	118	108	81	41	27	25	17	11	41	9	47	32	81	29	96	93

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-7
Influence of Rising Energy Bills

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
A130d. How influential were rising energy bills on your decision to purchase the rebated equipment?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very influential	72	72	68	86	71	74	66	74	70	74	70	76	67	76	74	95	57	76	75	74	69	73	58	70	75
Somewhat influential	21	20	28	9	20	22	27	19	26	17	21	21	23	18	23	5	30	20	21	23	25	19	29	21	21
Not at all influential	5	6	3	3	6	4	5	5	3	6	5	3	7	3	2	0	13	2	4	3	5	5	12	6	3
Don't know	2	3	1	1	3	1	2	2	1	3	3	0	3	4	1	0	0	2	0	0	1	3	1	3	1
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-8
Reasons for Participation

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
A45. Why did your company participate in the 2003 Express Efficiency program?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Acquiring the latest technology	17	17	15	20	19	16	10	19	17	17	17	17	18	23	19	14	12	19	2	12	20	20	12	14	20
Saving money on electric bills	59	62	53	64	64	54	55	60	53	63	60	57	60	56	53	72	59	60	27	67	59	57	31	60	57
Obtaining a rebate	35	33	39	31	26	43	45	32	35	35	34	37	38	32	34	57	18	39	57	39	31	31	64	28	43
Replacing old or broken equipment	11	9	13	15	7	14	19	9	12	11	11	12	14	11	11	26	8	12	11	16	16	8	30	4	19
Because the program was sponsored by a utility	1	0	2	0	1	0	0	1	0	1	1	0	1	1	1	0	0	0	0	0	2	1	0	1	1
Energy crisis	1	1	1	2	1	1	0	1	1	1	1	2	2	1	0	0	0	1	0	1	2	1	2	1	1
Helping protect the environment	2	1	2	2	1	2	1	2	1	2	1	2	5	1	2	0	1	0	0	2	1	1	2	3	1
Previous experience with other utility programs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0
Recommended by utility account reps	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0
Recommended by contractors	1	1	1	0	0	1	0	1	0	1	0	1	0	1	1	0	0	2	0	1	4	0	0	1	0
Participation in previous years	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Part of a broader facility remodeling/renovation	1	1	1	1	1	1	1	1	1	1	1	1	2	0	0	1	6	0	0	2	2	0	2	0	2
Save energy	32	31	33	34	36	29	20	36	31	32	30	34	23	31	32	37	50	35	13	23	26	37	16	40	22
Brighter/better light	4	5	2	4	5	3	5	3	4	4	4	2	5	4	5	10	0	2	0	4	5	3	0	3	4
Because it was available	0	0	1	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	0	4	0	4	0	1
Other	5	4	4	14	7	4	5	5	8	3	6	3	8	3	7	1	9	1	0	10	5	3	1	3	8
Don't know	1	0	1	4	1	1	1	1	1	1	1	1	0	0	4	0	0	0	0	0	0	1	0	1	1
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-9
Satisfaction

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
SAT1. How would you rate your overall satisfaction with the 2003 Express Efficiency program experience?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very satisfied	76	76	71	83	72	81	76	76	77	76	74	79	81	78	65	76	62	79	89	77	83	74	85	73	79
Somewhat satisfied	19	22	19	13	23	16	20	19	21	18	21	17	16	18	24	20	38	15	11	21	15	19	15	21	18
Not at all satisfied	4	1	9	1	4	3	2	4	2	5	4	3	2	1	10	3	0	4	0	2	2	5	0	4	3
Refused/don't know	1	1	1	3	1	0	2	1	1	1	1	1	0	3	1	0	0	2	0	0	0	2	0	2	0
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-10
Satisfaction with Application Process

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
SAT15. How would you rate your overall satisfaction with the application process?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very satisfied	70	68	70	77	68	74	73	70	68	73	71	69	70	73	60	72	51	80	93	75	78	66	84	65	76
Somewhat satisfied	17	20	14	15	17	17	20	16	21	14	16	19	17	15	19	10	44	12	7	20	16	16	13	17	18
Not at all satisfied	3	1	6	1	4	2	1	3	2	3	3	2	3	0	9	3	0	2	0	0	0	4	2	2	3
Refused/don't know	10	11	11	7	12	7	7	11	9	10	9	11	10	12	12	14	4	6	0	4	6	14	0	16	3
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-11
Satisfaction with Bill Savings

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
SAT30. How would you rate your overall satisfaction with the bill savings?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very satisfied	52	48	55	57	49	55	52	52	52	52	50	55	49	49	49	56	49	57	89	50	47	54	44	51	53
Somewhat satisfied	33	37	28	30	32	34	32	33	32	34	32	34	36	34	35	26	36	31	10	34	28	32	35	34	32
Not at all satisfied	6	7	6	2	8	4	6	5	4	7	7	3	3	7	3	4	10	6	0	4	6	6	2	7	4
Refused/don't know	10	8	11	11	11	8	10	9	12	7	10	8	11	10	13	14	5	6	1	11	19	7	18	8	11
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-12
Satisfaction with Contractor

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
SAT40. How would you rate your overall satisfaction with your contractor?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very satisfied	79	77	75	86	74	82	82	77	80	77	78	79	76	73	88	94	92	78	92	72	71	84	88	82	77
Somewhat satisfied	20	23	20	14	23	17	16	21	19	21	20	19	22	26	8	6	8	21	8	26	24	15	12	14	22
Not at all satisfied	2	0	4	0	3	0	1	2	2	1	2	0	2	0	3	0	0	1	0	2	1	1	0	4	1
Refused	0	0	1	0	0	1	0	0	0	1	0	1	0	2	0	0	0	0	0	0	3	0	0	0	0
N	268	106	97	41	121	137	78	190	129	139	171	97	66	50	40	14	14	39	8	100	50	81	37	101	167

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-13
Satisfaction with Rebate Amount

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
SAT46. How would you rate your overall satisfaction with the rebate amount?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very satisfied	60	56	62	68	54	66	57	61	61	59	57	66	65	61	49	79	67	61	68	54	68	62	64	59	61
Somewhat satisfied	23	24	20	23	27	20	26	22	18	26	26	17	18	19	33	7	19	23	24	37	24	15	32	15	32
Not at all satisfied	2	3	3	0	1	3	1	3	2	3	2	4	3	0	4	0	0	3	0	2	1	3	2	3	1
Refused/don't know	15	18	15	9	17	12	16	14	19	12	16	14	14	20	14	14	14	13	8	8	7	20	1	23	6
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-14
Satisfaction with Equipment

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
SAT55. How would you rate your overall satisfaction with the equipment you purchased and its performance?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very satisfied	76	77	71	78	71	80	79	75	79	73	74	79	84	72	68	78	81	75	94	79	79	73	85	73	79
Somewhat satisfied	17	17	20	10	21	14	14	18	14	19	18	14	12	21	21	1	15	16	6	13	13	19	13	17	16
Not at all satisfied	5	5	7	2	5	4	4	5	5	5	5	4	2	5	6	13	4	5	0	4	8	5	0	8	1
Refused/don't know	3	1	2	10	2	2	3	3	3	3	3	2	2	2	5	8	0	4	0	4	0	2	1	2	4
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-15
Satisfaction with Rebate Turnaround

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
SAT65. How would you rate your overall satisfaction with the rebate turnaround time?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very satisfied	60	56	63	61	49	68	59	60	59	60	55	67	60	59	63	60	35	67	67	62	66	56	74	54	63
Somewhat satisfied	26	32	18	27	29	24	32	24	30	23	28	24	30	27	18	8	53	24	24	28	18	27	15	29	24
Not at all satisfied	5	4	9	0	8	3	3	6	2	8	6	4	5	3	12	2	0	3	0	1	3	8	4	6	4
Don't know	9	8	11	12	14	5	6	11	9	9	12	5	5	11	6	31	12	6	9	9	13	9	6	10	9
N	325	127	114	57	125	188	100	225	146	179	195	130	63	52	46	24	16	65	16	108	65	101	51	138	187

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-16
Reasons for Dissatisfaction with Express Program Experience

EXPRESS EFFICIENCY SURVEY	
ST44a. Why are you somewhat or not satisfied with the 2003 Express Efficiency program experience?	
Took too much time	7
Have not seen the savings I expected	8
Paperwork tedious/confusing	7
Never got a rebate/rebate denied	12
Unhappy with equipment	17
Difficult to get ahold of someone at utility	8
Other	39
Don't know	6
N	104

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-17
Reasons for Dissatisfaction with Application Process

EXPRESS EFFICIENCY SURVEY	
ST44b. Why are you somewhat or not satisfied with the application process?	
Application got lost/never got there	3
Confusing/complicated	27
Time consuming	25
Other	41
Refused	2
Don't know	7
N	94

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-18
Reasons for Dissatisfaction with Bill Savings

EXPRESS EFFICIENCY SURVEY	
ST44c. Why are you somewhat or not satisfied with the bill savings?	
Energy savings lower than expected	56
Too soon to tell energy savings	3
Hard to determine energy savings	9
Happy with savings	10
Other	12
Refused	3
Don't know	5
N	181

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-19
Reasons for Dissatisfaction with Rebate Amount

EXPRESS EFFICIENCY SURVEY	
ST44d. Why are you somewhat or not satisfied with the rebate amount?	
Rebate should be higher	51
Never got a rebate	11
Happy with rebate	5
Other	20
Refused/don't know	12
N	112

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-20
Reasons for Dissatisfaction with Equipment

EXPRESS EFFICIENCY SURVEY	
ST44e. Why are you somewhat or not satisfied with the equipment you purchased and its performance?	
Bulbs did not last/burned out	28
Not bright enough	13
Equipment did not work right/poor quality	22
Equipment does not save energy	6
Happy with equipment	3
Other	22
Refused	2
Don't know	9
N	113

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-21
Reasons for Dissatisfaction with Rebate Turnaround

EXPRESS EFFICIENCY SURVEY	
ST44f. Why are you somewhat or not satisfied with the rebate turnaround time?	
Took too long	58
Application got lost	4
Too much paperwork	6
Other	22
Refused	4
Don't know	8
N	78

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-22
Filled Out Application

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																								
PE61. Who filled out your application?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Me/my company	61	62	63	55	58	66	62	61	62	61	59	65	65	48	60	76	57	61	87	55	73	62	89	55	69
My contractor/lighting vendor	27	27	24	33	29	24	32	25	23	29	30	22	26	36	30	20	24	25	9	38	22	23	4	29	25
Both me and my contractor	2	1	0	5	1	1	2	1	3	0	1	2	0	0	2	2	0	5	0	4	1	0	0	1	2
Utility rep	3	3	4	4	4	2	1	4	2	4	4	3	2	1	5	2	10	3	4	1	0	5	7	4	2
Never saw an application	0	0	1	0	1	0	0	1	0	1	1	0	0	1	0	0	0	2	0	0	1	1	0	1	0
Other	0	0	1	0	0	1	0	1	1	0	0	1	0	1	0	0	4	0	0	0	0	1	0	1	0
Refused/don't know	6	8	6	3	6	6	3	7	8	5	5	8	7	13	3	0	4	4	0	3	3	9	0	10	2
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-23
Who Did Rebate Check Go To

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE62. Who did the rebate check go to?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Me/my company	64	60	62	77	57	71	75	60	64	64	63	65	63	49	59	74	69	66	100	79	70	54	96	46	83
My contractor/lighting vendor	20	19	25	15	25	16	15	21	17	21	20	19	23	25	27	6	23	18	0	15	23	23	0	30	8
Did not know there was a rebate check	1	1	0	0	0	1	0	1	0	1	0	2	0	0	0	10	0	0	0	0	1	1	0	1	0
I never got it	3	3	4	0	4	1	1	3	4	1	3	1	1	4	2	10	0	3	0	1	0	4	0	4	1
Other	1	1	0	1	1	0	0	1	1	1	1	1	0	2	1	0	0	1	0	0	1	1	2	1	0
Refused/don't know	12	17	9	7	13	11	9	14	14	12	12	12	13	19	10	0	8	12	0	6	6	17	2	17	7
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-24
Online Application

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE47. Were you aware that rebate applications are online at your utility website?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Yes	39	34	37	60	30	48	40	39	48	33	35	47	48	35	34	61	26	36	78	44	49	35	51	28	52
No	59	65	60	39	68	51	60	58	51	65	64	51	52	65	62	39	64	62	22	55	51	62	49	70	47
Refused/don't know	2	1	3	2	3	1	0	3	1	2	2	2	0	0	4	0	10	2	0	1	1	3	0	3	1
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-25
Download Application

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE50. Did you download a rebate application off your utility's website?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Yes	16	14	12	28	9	22	18	15	23	11	13	21	24	13	10	20	14	17	28	27	23	10	18	7	25
No	83	85	87	69	89	77	80	84	77	87	86	79	76	87	87	80	86	81	72	72	75	89	75	93	72
Don't know	1	0	1	3	1	1	2	1	1	2	2	1	0	0	4	0	0	2	0	1	2	1	7	0	3
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-26
Submission Preference

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE64. Would you prefer to submit your rebate application electronically or in the mail to your utility?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Electronically	27	24	23	38	22	30	33	25	28	26	26	29	45	30	17	12	24	27	27	41	36	18	42	18	35
In the mail	54	62	54	30	63	48	42	58	52	55	57	50	35	56	71	43	76	51	16	37	30	65	45	67	43
Either - no preference	18	14	18	31	14	21	22	16	16	19	17	19	20	11	10	44	0	21	57	18	33	16	12	14	21
Don't know	1	0	4	0	1	1	2	1	3	0	1	2	0	3	3	0	0	1	0	3	1	1	0	1	2
N	321	131	120	44	125	186	89	232	145	176	184	137	75	50	46	20	14	65	13	84	72	118	47	158	163

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-27
Reservation

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE65. Did you make a reservation to reserve funds for a rebate on your equipment?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Yes	27	16	33	46	22	31	21	29	28	26	23	34	36	20	36	20	16	29	17	28	39	24	49	12	43
No	64	76	57	45	69	60	71	61	62	65	69	56	52	67	58	80	63	65	81	64	50	67	45	78	49
Refused/don't know	9	9	10	9	9	9	7	10	10	9	8	10	12	13	6	1	21	6	1	9	11	10	5	10	8
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-28
Reservation Satisfaction

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE66. How satisfied were you with the reservation experience?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very satisfied	72	74	71	68	75	71	70	72	78	67	74	69	73	91	60	53	70	66	63	67	70	72	91	80	69
Somewhat satisfied	16	22	13	14	7	19	16	15	14	16	9	22	23	9	20	6	0	14	37	16	28	14	9	14	16
Not at all satisfied	9	4	16	7	15	7	4	11	5	13	10	8	4	0	20	39	0	10	0	6	0	14	0	5	11
Don't know	3	0	0	11	3	4	10	2	3	3	6	0	0	0	0	2	30	10	0	10	2	0	0	1	4
N	145	39	61	30	54	85	36	109	67	78	80	65	33	21	23	9	7	29	6	35	36	49	25	44	101

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-29
Reservation Dissatisfaction

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE66a. Why are you not satisfied with the reservation experience?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
We did not receive a rebate	41	0	30	100	16	74	100	35	51	38	16	74	0	0	0	100	0	100	0	100	0	26	0	100	33
They lost the reservation	20	100	13	0	16	26	100	12	49	12	16	26	100	0	0	0	0	44	0	0	0	25	0	0	23
It took too long	48	0	70	0	84	0	0	53	0	62	84	0	0	0	100	0	0	0	0	0	0	60	0	0	54
N	5	1	3	1	2	3	1	4	2	3	2	3	1	0	1	1	0	2	0	1	0	4	0	1	4

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit C-30
Rebate Satisfaction

EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED								
SAT46. How would you rate your overall satisfaction with the rebate amount?	Total (%)	CFL (%)	Lighting (%)	HVAC (%)	Water Heating (%)	Refrigeration (%)	Agriculture (%)	Food Service (%)
Very satisfied	67	68	55	73	64	57	87	90
Somewhat satisfied	16	11	30	11	36	43	13	10
Not at all satisfied	1	1	1	0	0	0	0	0
Refused/don't know	15	20	13	16	0	0	0	0
N	542	308	113	46	42	14	12	7

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

APPENDIX D:

PROGRAM INFLUENCE DATA TABLES

Exhibit D-1
Operating Condition of Existing Equipment

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
A140. What was the operating condition of the equipment before you replaced it?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Old equipment had failed	7	12	3	0	2	11	18	3	12	4	8	5	1	8	2	2	4	20	51	9	6	6	9	3	12
New equipment did not replace anything	8	6	5	16	6	10	10	7	8	7	8	7	9	9	0	9	4	6	3	17	13	2	11	3	13
Old equipment was working fine	69	69	74	61	74	64	54	74	64	72	67	72	71	74	83	44	83	56	32	55	67	77	38	82	54
Old equipment had problems	21	17	22	30	21	21	23	21	24	19	21	21	25	19	15	47	13	24	28	25	21	18	42	15	28
Don't know	1	1	1	0	0	1	1	1	1	1	1	1	2	0	0	0	0	1	0	2	0	0	0	0	1
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit D-2
Intent to Purchase Energy-Efficient Products in Future

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE11. Are you more or less likely to install energy-efficient products as a result of your experience with the program?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
More likely	87	86	89	85	83	91	86	87	90	85	85	90	86	90	85	73	80	88	100	87	89	86	92	84	90
Less likely	4	4	4	7	4	5	3	5	2	6	4	6	6	2	2	18	0	5	0	5	4	4	0	5	3
Same	6	7	6	5	10	3	11	5	6	6	9	2	8	6	9	7	17	1	0	7	4	6	6	7	5
Refused/don't know	3	3	1	3	3	1	1	3	2	3	3	2	0	2	4	2	3	6	0	2	3	3	2	4	1
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit D-3
Energy-Efficient Products that Participants Intend to Purchase

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE12. What energy efficient equipment are you more likely to install?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
HVAC	21	20	20	25	12	28	16	23	19	23	15	31	22	13	12	30	28	33	0	21	21	22	14	19	23
Heating	3	4	2	2	3	4	2	4	3	4	2	5	1	3	1	4	3	2	9	2	8	2	20	3	4
Refrigerator	11	7	16	10	13	9	10	11	11	10	12	9	11	3	20	25	0	13	15	10	6	12	6	7	14
Lighting	44	49	43	37	37	50	36	47	54	37	37	56	56	49	32	34	40	45	33	38	46	50	12	55	34
Anything	3	2	2	6	4	2	4	2	2	4	4	1	2	3	2	0	0	6	0	5	5	1	5	2	3
Clothes washer/dryer	3	4	1	0	3	3	4	2	2	3	3	2	0	5	0	0	0	5	0	3	2	2	11	3	3
Other	13	11	15	13	15	12	17	12	12	14	14	11	10	12	24	11	7	12	25	16	10	10	42	10	16
Don't know	19	21	15	22	24	16	23	18	19	19	24	11	22	21	21	7	22	12	34	21	17	19	4	17	21
N	475	207	166	73	204	252	128	347	212	263	291	184	98	95	75	22	21	94	16	161	82	183	49	260	215

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit D-4
CFL Replacement

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE13. When your CFLs burn out or fail, will you replace them with CFLs or incandescent?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
CFLs	84	85	80	89	83	85	90	83	89	81	85	82	86	83	87	46	94	80	84	85	74	84	0	84	0
Incandescent	6	7	6	4	9	4	3	7	5	7	8	3	4	9	8	28	0	5	16	10	10	5	0	6	0
Both	7	5	14	0	4	11	1	9	2	11	3	13	6	4	5	26	6	10	0	2	16	8	0	7	0
Refused	1	0	0	5	0	0	1	1	2	0	0	1	0	0	0	0	0	3	0	1	0	1	0	1	0
Don't know	2	2	0	2	3	0	4	1	2	1	3	0	3	4	0	0	0	1	0	1	0	2	0	2	0
N	308	142	117	48	137	156	73	235	121	187	185	123	67	63	53	12	14	69	2	112	45	151	0	308	0

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit D-5
Influence of Program in Purchase of CFLs in Future

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																								
PE15. How much did the program influence you to use CFLs in the future?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very influential	64	61	66	71	65	62	52	67	57	68	62	67	66	68	60	27	59	66	100	71	65	62	0	64	0
Somewhat influential	29	32	27	18	28	30	41	26	37	23	30	27	28	29	30	46	41	28	0	21	28	30	0	29	0
Not at all influential	5	5	5	10	4	6	7	5	4	6	6	5	6	0	5	27	0	3	0	7	4	5	0	5	0
Don't know	2	2	3	1	4	1	0	3	2	2	3	1	1	3	6	0	0	2	0	1	3	2	0	2	0
N	276	124	109	42	119	144	64	212	109	167	162	114	60	56	47	10	14	62	1	96	40	140	0	276	0

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit D-6
Reasons Why Program Did Not Influence Future Purchase

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE15A. Why was the program not influential in your plans to use CFLs in the future?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
I would have used CFLs anyway	23	8	37	37	3	38	45	16	0	32	20	27	0	0	0	55	0	100	0	46	47	14	0	23	0
I knew CFLs were more efficient and used them before	22	39	11	0	0	26	0	30	53	11	0	57	19	0	100	0	0	0	0	25	53	21	0	22	0
Rebate was too low	7	0	0	31	0	12	28	0	24	0	11	0	0	0	0	0	0	0	0	29	0	0	0	7	0
CFLs did not work right/did not fit	15	0	30	31	24	12	27	12	23	12	26	0	40	0	0	45	0	0	0	0	0	21	0	15	0
Rebate did not influence me	7	0	23	0	0	12	0	9	0	9	0	17	40	0	0	0	0	0	0	0	0	9	0	7	0
Don't know	26	53	0	0	72	0	0	34	0	36	44	0	0	0	0	0	0	0	0	0	0	35	0	26	0
N	14	5	5	4	3	10	4	10	6	8	7	7	4	0	2	3	0	2	0	5	2	7	0	14	0

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit D-7
Intent to Purchase CFLs without Rebate

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE14. What if there was no rebate? Would you still install CFLs?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Yes	86	89	79	93	84	90	89	85	90	84	85	88	92	81	84	86	94	77	100	88	77	86	0	86	0
No	9	6	16	7	11	7	8	10	5	12	11	8	6	14	13	12	6	11	0	4	11	10	0	9	0
Don't know	5	5	5	1	5	3	2	5	5	4	5	4	2	5	3	2	0	12	0	7	12	4	0	5	0
N	276	124	109	42	119	144	64	212	109	167	162	114	60	56	47	10	14	62	1	96	40	140	0	276	0

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit D-8
Purchased Energy-Efficient Products as Result of Program

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
PE55. Did you buy more energy efficient equipment as a result of the program?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Yes	31	30	30	37	30	31	26	32	29	32	28	35	32	30	22	43	38	29	39	28	26	33	20	33	28
No	68	69	70	60	69	68	74	66	69	67	71	64	67	68	77	57	62	69	61	70	74	65	80	65	71
Refused/don't know	1	1	1	3	1	1	0	2	2	1	1	2	1	2	1	0	0	2	0	1	0	1	0	2	0
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit D-9
Equipment Purchased In Absence of Rebate

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
REB50. What equipment would you have purchased had the rebate not existed?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Same energy efficient equipment now	25	15	31	20	22	25	14	29	30	22	17	32	11	21	42	58	31	22	7	18	20	18	53	14	38
Same energy efficient equipment later	23	27	18	30	21	25	30	21	21	24	24	23	31	20	22	35	16	10	51	21	20	24	33	22	25
Standard equipment	24	38	15	27	30	20	35	19	18	26	34	14	25	13	13	5	36	39	27	32	19	27	8	33	12
No equipment	25	17	30	20	23	27	18	27	24	25	21	28	31	36	15	1	16	26	8	25	39	22	5	27	22
Refused/don't know	4	3	5	2	4	3	4	4	7	2	4	3	2	10	8	0	0	2	7	4	2	9	0	4	3
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as percent of survey participants, weighted by energy savings.
N is the number of respondents.

Exhibit D-10
CFL Purchase in Absence of Rebate

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED - CFL ONLY																									
REB50. What equipment would you have purchased had the rebate not existed?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	Other Lighting Purchase (%)
Same energy efficient equipment now	14	6	13	21	16	15	8	16	12	15	11	17	4	35	27	1	12	20	0	17	9	17	0	14	0
Same energy efficient equipment later	23	24	12	36	22	23	27	22	43	17	24	22	29	10	42	97	73	13	0	21	23	29	0	23	0
Standard equipment	34	50	22	38	41	31	55	28	19	39	50	23	28	20	20	2	3	51	100	42	22	33	0	34	0
No equipment	28	21	53	5	21	32	10	34	26	29	15	38	39	35	11	0	12	16	0	20	46	20	0	28	0
N	290	136	108	45	131	148	71	219	113	177	178	112	63	60	49	12	14	65	2	106	44	140	0	290	0

* Values are shown as percent of survey participants, weighted by energy savings.
N is the number of respondents.

Exhibit D-11
Timing of Purchase in Absence of Rebate

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED - Lighting only																									
REB55. If the rebate was not available, when would you have bought the equipment?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
At the same time	53	59	45	46	46	57	69	48	62	46	55	50	51	59	49	40	52	64	84	72	63	42	69	40	68
Within a year	25	21	31	22	27	24	20	26	21	27	24	26	20	20	38	25	29	16	6	12	23	31	18	36	12
More than a year later	19	16	19	31	24	16	11	22	14	23	19	20	23	21	13	35	18	18	8	14	12	23	13	20	18
Refused/don't know	3	3	4	0	2	3	0	4	3	3	2	4	7	0	0	0	0	2	2	2	2	4	0	4	2
N	293	123	106	44	115	170	78	215	127	166	166	127	66	43	44	23	19	52	10	87	54	115	37	159	134

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit D-12
Years Participant Would Have Waited in Absence of Rebate

EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED								
REB60. How many years would you have waited before buying the equipment if the rebate had not existed?	Total (%)	CFL (%)	Lighting (%)	HVAC (%)	Water Heating (%)	Refrigeration (%)	Agriculture (%)	Food Service (%)
1	8	9	14	0	0	0	0	0
2	61	85	41	49	84	0	37	0
3	21	1	12	0	16	0	63	0
Don't know	11	4	33	51	0	0	0	0
N	52	32	12	2	4	0	2	0

* Values are shown as percent of survey participants, weighted by energy savings.
N is the number of respondents.

APPENDIX E:

VENDOR ASSESSMENT DATA TABLES

Exhibit E-1
Source of Program Awareness

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
A30. How did you first learn about the 2003 Express Efficiency program?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Business Energy Audits	1	0	0	2	0	1	1	1	0	1	0	1	0	1	0	0	0	2	0	0	2	0	2	0	1
Respondent approached utility about another matter	2	1	2	3	1	3	2	2	3	1	1	3	3	0	0	0	8	2	0	2	9	1	2	1	3
Contacted by utility rep	18	15	15	34	17	18	16	19	15	21	16	22	23	16	19	41	23	15	10	14	14	19	46	18	19
Contractor/vendor	33	30	32	45	35	31	42	30	31	34	37	26	35	40	38	13	21	34	18	49	33	25	20	31	35
Utility brochure in mail	12	14	16	1	17	9	6	15	12	13	13	11	11	12	16	19	5	11	1	9	11	15	7	10	15
Bill insert	3	2	5	1	4	3	2	3	4	3	3	3	3	3	7	1	0	3	1	3	6	3	7	2	4
Word-of-mouth	13	12	15	13	11	15	12	13	15	11	12	15	13	14	11	20	10	12	15	14	13	13	6	13	13
Television/radio/newpaper ad	8	11	7	2	10	7	7	8	9	8	9	6	1	8	12	0	29	7	0	1	4	12	0	11	5
Magazine or trade journal	1	1	0	0	0	1	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	1	0	1	0
Participation in previous years	5	6	4	7	3	8	6	5	10	2	4	7	2	6	7	1	0	11	34	4	9	6	0	3	8
Manufacturer info/suggestion	1	1	1	1	1	2	3	1	1	1	2	0	0	2	0	0	0	2	4	3	0	0	4	0	2
Community organization	2	3	2	0	2	2	0	3	2	2	1	3	0	3	0	0	0	2	0	0	1	3	2	3	1
Seminar	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	3	0	0	0	0
Utility website	2	2	1	4	1	3	0	3	3	1	1	4	3	2	2	5	0	0	15	4	2	1	3	1	3
Store where equipment was purchased	1	2	2	0	1	2	4	1	1	2	2	1	1	0	1	0	0	5	0	4	0	0	0	1	2
Other	3	4	4	1	5	2	6	2	4	2	4	2	6	1	3	0	14	1	0	1	3	4	4	5	1
Don't know	2	3	2	0	3	1	1	3	2	2	2	2	3	3	2	0	0	3	1	2	1	3	0	4	1
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit E-2
Contractor Installation

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																								
V1. Did you use a contractor to install the measure rebated through the 2003 Express Efficiency program?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Yes	47	40	50	57	47	48	57	44	53	43	50	42	60	46	53	37	39	34	74	62	63	37	70	27	70
No	52	59	49	43	53	52	41	56	47	56	49	58	38	54	47	63	61	66	26	38	37	62	30	73	30
Don't know	1	1	1	0	0	1	1	0	0	1	1	0	3	0	0	0	0	0	0	0	1	1	0	0	1
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit E-3
CFL Purchase

SINGLE FAMILY REBATE PARTICIPANTS SURVEYED					
	Total	PGE	SCE	SDGE	SCG
CFL Purchase	52	31	68	30	0
No CFL Purchase	48	69	32	70	100
N	542	183	211	95	53

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit E-4
New Contractor

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
V5. Had you worked with this contractor before participating in the 2003 Express Efficiency program?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Yes	38	27	47	43	28	44	50	32	40	36	37	39	38	25	45	54	40	45	92	40	29	35	50	25	43
No	62	73	53	57	72	56	50	68	60	64	63	61	62	75	55	46	60	55	8	60	71	65	48	75	57
Don't know	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
N	268	106	97	41	121	137	78	190	129	139	171	97	66	50	40	14	14	39	8	100	50	81	37	101	167

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit E-5
Importance of Contractor Input

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
V40. How important was the input from the contractor you worked with in deciding which specific equipment to install?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very important	63	68	55	68	65	62	68	61	67	59	67	56	57	64	60	55	71	69	99	61	51	69	52	70	60
Somewhat important	17	13	21	17	13	21	15	18	13	21	15	22	23	10	15	39	10	16	1	21	22	13	18	14	18
Not at all important	16	13	23	9	16	15	16	16	17	15	15	19	18	21	19	6	19	15	0	13	27	15	30	16	16
Don't know	4	6	0	6	6	2	1	5	3	4	4	3	2	5	6	0	0	0	0	5	0	3	0	0	5
N	268	106	97	41	121	137	78	190	129	139	171	97	66	50	40	14	14	39	8	100	50	81	37	101	167

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit E-6
Contractor Satisfaction

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
SAT40. Overall, how satisfied are you with your contractor?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Very satisfied	79	77	75	86	74	82	82	77	80	77	78	79	76	73	88	94	92	78	92	72	71	84	88	82	77
Somewhat satisfied	20	23	20	14	23	17	16	21	19	21	20	19	22	26	8	6	8	21	8	26	24	15	12	14	22
Not at all satisfied	2	0	4	0	3	0	1	2	2	1	2	0	2	0	3	0	0	1	0	2	1	1	0	4	1
Refused	0	0	1	0	0	1	0	0	0	1	0	1	0	2	0	0	0	0	0	0	3	0	0	0	0
N	268	106	97	41	121	137	78	190	129	139	171	97	66	50	40	14	14	39	8	100	50	81	37	101	167

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit E-7
Reasons for Dissatisfaction

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
SAT45. Why are you not satisfied with your contractor?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Too slow	8	7	9	11	14	1	12	7	15	2	12	0	0	25	22	0	0	2	0	0	15	17	14	7	8
Not punctual	2	4	0	0	2	1	0	2	4	0	2	1	2	6	0	0	0	0	0	0	17	0	0	2	2
Did not finish the job	6	6	8	3	7	6	8	6	12	1	5	8	7	9	0	0	0	4	0	9	16	0	0	14	4
Poor quality of work	28	32	8	81	16	45	25	29	30	26	19	47	37	11	0	70	100	15	0	43	11	13	0	14	33
Neutral/contractor was ok	21	21	30	0	22	22	24	20	9	31	22	20	21	4	22	0	0	56	0	28	0	20	0	21	21
No follow up	7	11	5	0	8	5	4	8	4	9	7	6	0	11	7	30	0	15	100	6	13	4	27	10	6
Other	27	25	31	5	32	15	22	29	22	31	34	12	18	35	49	0	0	23	0	18	21	38	73	42	22
Refused	2	0	5	0	4	0	8	0	4	0	3	0	7	0	0	0	0	0	0	4	0	0	0	0	3
Don't know	4	0	10	0	2	7	0	5	6	2	2	9	11	0	0	0	0	0	0	0	11	8	0	0	5
N	60	27	24	6	32	26	14	46	30	30	40	20	15	14	5	2	1	10	1	26	13	16	5	23	37

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

APPENDIX F:

FIRMOGRAPHICS DATA TABLES

Exhibit F-1
Square Footage of Business

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
F1. Can you estimate the total square footage of your facility at this location?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Less than 2,500 square feet	22	34	13	4	37	11	18	23	25	20	30	10	24	41	23	10	35	7	4	17	15	25	24	27	16
2,500 but less than 5,000 square feet	18	24	18	2	21	15	25	16	18	18	21	13	11	23	30	13	17	12	13	18	15	19	1	18	18
5,000 but less than 10,000 square feet	16	13	26	7	15	17	15	17	11	21	16	16	16	12	13	24	12	21	1	16	11	17	9	13	20
10,000 but less than 20,000 square feet	10	11	9	9	7	13	10	10	12	8	8	14	10	12	10	6	13	8	6	9	12	10	6	11	8
20,000 but less than 50,000 square feet	12	5	12	32	9	15	12	12	9	14	10	15	10	6	14	23	10	16	0	14	16	10	8	9	15
50,000 but less than 100,000 square feet	6	1	7	18	2	10	8	5	6	6	5	9	11	3	2	10	4	5	31	10	16	2	27	5	8
Ag/Nonfacility - Outdoors	0	0	1	1	0	1	2	0	0	1	1	0	0	1	0	0	0	0	10	1	0	0	0	0	0
Over 100,000 square feet	4	2	2	13	0	7	1	5	4	3	1	9	6	0	0	13	1	6	3	6	2	2	20	2	6
Refused/don't know	11	11	12	13	9	12	8	12	13	10	9	15	11	3	8	2	8	26	32	9	13	13	5	14	9
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit F-2
Number of Employees

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
F5. Which of the following categories describes the number of employees your firm has at this location?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
1 to 5	46	72	30	2	52	42	38	48	54	40	48	43	42	72	30	22	44	41	3	37	27	54	22	54	36
6 to 10	13	11	19	6	13	12	14	12	13	13	14	12	13	8	14	3	21	18	15	12	18	13	9	14	11
11 to 20	14	10	25	7	17	13	17	14	10	18	15	13	14	12	28	5	7	13	18	15	17	14	14	13	16
21 to 50	12	4	15	32	7	16	18	10	10	14	11	14	11	5	16	22	5	16	23	17	18	9	19	10	15
51 to 100	5	2	3	20	4	7	6	5	6	5	5	6	6	2	9	3	6	4	40	7	6	4	10	3	8
Over 100	7	0	6	28	6	9	4	8	3	10	6	9	10	1	2	43	12	5	1	7	12	6	22	3	11
Refused/don't know	2	1	3	6	1	1	3	2	4	1	2	3	4	1	1	2	5	3	0	4	3	1	5	2	2
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit F-3
Years at Current Location

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
F12. How long has your business been at this location?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Less than 10 years	40	48	35	25	58	26	32	43	37	42	48	27	33	42	41	34	41	36	9	38	47	40	36	43	37
10 - 20 years	29	27	33	31	25	33	34	27	29	29	28	31	24	38	31	13	31	37	3	25	28	32	24	30	29
20 - 30 years	13	15	10	13	9	17	9	14	14	12	9	19	14	6	16	26	14	13	26	9	5	15	18	12	14
30 - 50 years	11	8	13	15	6	16	10	11	12	10	8	15	18	7	10	15	11	9	13	14	10	9	14	10	11
More than 50 years	4	3	4	5	1	4	9	2	5	2	4	2	1	6	1	5	3	3	48	5	5	3	5	3	4
Don't know	3	0	5	11	1	4	5	3	3	4	2	6	9	1	1	8	0	1	0	9	4	1	2	1	6
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit F-4
Type of Business

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
F1. Type of business	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Office	8	9	8	4	9	7	10	8	8	8	9	7	32	0	0	0	4	4	0	11	13	7	8	5	12
Retail (non-food)	17	23	13	9	26	11	17	17	23	13	23	8	4	66	9	2	10	3	0	20	12	17	1	17	18
College/university	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4	0	0
School	3	1	2	12	0	6	3	3	1	4	1	6	4	0	0	30	0	0	0	8	4	0	6	1	5
Grocery store	4	4	3	6	7	1	5	3	2	5	6	1	0	2	12	0	0	3	0	4	2	4	1	2	6
Convenience store	2	0	5	0	3	1	1	2	1	2	2	1	0	2	6	0	0	0	0	1	2	2	0	1	2
Restaurant	12	8	21	6	19	6	8	13	6	17	15	8	1	2	62	3	0	1	0	7	8	15	10	17	7
Health care/hospital	7	6	4	14	4	9	7	7	7	7	6	8	5	0	0	36	0	16	13	9	3	6	3	6	7
Hotel or motel	11	9	14	11	1	18	15	9	11	10	7	17	1	0	5	0	0	46	0	13	23	8	11	12	9
Warehouse	3	3	1	5	2	3	5	2	6	1	3	3	2	0	0	0	13	8	0	2	4	3	0	3	3
Personal Service	4	6	1	4	6	2	1	5	3	4	5	2	4	12	2	0	0	2	0	1	1	6	0	6	1
Community Service/Church/ Temple/Municip	4	4	7	1	3	5	3	5	2	6	3	6	15	0	0	19	1	1	0	5	4	4	4	3	6
Industrial Process/ Manufacturing/Assemb	5	4	5	6	4	6	6	5	6	5	5	5	1	2	0	0	46	1	32	3	8	5	13	5	6
Condo Assoc/Apartment Mgmt	5	7	1	3	0	8	2	6	6	4	1	11	8	0	0	0	3	1	0	0	5	7	2	7	2
Agriculture	2	0	3	3	1	3	5	0	0	3	2	1	1	0	0	0	0	1	48	3	2	0	16	1	2
Laundromat/dry cleaner	3	3	2	0	5	0	1	3	3	2	4	1	0	11	0	0	0	0	0	2	1	2	11	2	4
Auto repair	1	1	2	0	1	1	1	1	1	1	1	1	0	0	0	0	0	5	0	1	0	1	0	1	1
Retirement center/senior housing	1	1	2	2	1	2	0	2	0	2	1	2	8	0	0	0	0	0	0	0	1	2	0	2	1
Other	8	9	6	10	6	11	8	8	11	6	6	11	14	1	3	7	17	8	6	7	6	9	10	8	8
Refused/don't know	1	0	1	4	1	0	0	1	2	0	1	1	0	1	1	0	5	2	0	2	0	1	0	1	1
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit F-5
Rent or Own Business

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
R5. Does your business own or lease the facility?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Own	52	46	52	70	0	100	62	49	56	50	26	96	65	24	32	66	41	71	99	61	54	47	63	47	59
Lease/rent	45	53	42	27	100	0	33	49	40	48	72	0	33	74	62	34	59	25	1	35	39	51	34	50	39
Other	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	1	0	1	3	0	0	0	1
Refused/don't know	3	1	5	3	0	0	4	2	4	2	2	4	1	3	5	0	0	2	0	3	4	2	4	4	1
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit F-6
Language Other Than English Spoken at Business

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
L5. Is a language other than English spoken at your business?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Yes	57	51	63	68	62	55	48	60	0	100	59	55	59	44	71	81	52	53	46	55	53	60	44	61	54
No	42	48	36	32	37	45	51	38	98	0	40	44	40	56	27	19	48	47	54	42	43	40	55	39	45
Refused/don't know	1	1	1	0	1	0	1	1	2	0	1	1	1	1	2	0	0	0	0	2	4	0	1	0	2
N	542	234	194	83	233	287	149	393	236	306	332	210	116	102	87	30	25	107	16	183	95	211	53	308	234

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

Exhibit F-7
What Non-English Language is Spoken at Business

	EXPRESS EFFICIENCY REBATE PARTICIPANTS SURVEYED																									
L10. Other than English, what language is primarily spoken at your business?	Total (%)	Very Small (%)	Small (%)	Medium (%)	Renter (%)	Owner (%)	Rural (%)	Urban (%)	English (%)	Other Language (%)	Any HTR (%)	Non HTR (%)	Office (%)	Retail (%)	Restaurant/ Grocery (%)	Institutional (%)	Industrial (%)	Misc. Commercial (%)	Agriculture (%)	PGE (%)	SDGE (%)	SCE (%)	SCG (%)	CFL Purchase (%)	No CFL Purchase (%)
Spanish	65	58	67	78	54	74	82	60	0	65	62	70	66	73	54	94	26	75	100	77	84	57	84	54	79
Chinese	21	30	17	7	26	16	2	26	0	21	20	21	18	16	21	0	61	13	0	7	2	30	5	30	9
Korean	3	4	3	2	5	2	1	4	0	3	4	2	7	5	3	0	0	0	0	1	0	5	0	4	3
Vietnamese	4	2	6	0	6	1	2	4	0	4	4	2	4	3	9	0	0	0	0	2	4	4	0	6	1
Japanese	1	1	0	0	1	0	1	1	0	1	1	0	0	0	0	0	8	0	0	0	0	1	5	1	0
Indian	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3	0	0	0	0
More than one	3	1	2	8	1	4	8	1	0	3	3	2	0	2	1	4	0	9	0	8	6	0	0	1	4
Other	4	4	4	2	7	1	5	4	0	4	6	1	6	0	10	1	5	2	0	6	2	3	6	5	3
Don't know	0	0	0	3	0	1	0	1	0	0	0	1	0	0	2	0	0	0	0	0	0	1	0	0	1
N	306	112	121	60	138	161	79	227	0	306	193	113	64	47	60	24	12	60	11	103	51	129	23	187	119

* Values are shown as weighted percent of survey participants.
N is the number of respondents.

APPENDIX G:

SURVEY INSTRUMENTS

2003 EXPRESS EFFICIENCY
PARTICIPANT SURVEY

PARTICIPANT INTRODUCTION

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

Our records show that your company purchased <MEASURE> last year and received a rebate from < UTILITY >. We are calling to do a follow-up study about your firm's participation in this program, which is called the EXPRESS EFFICIENCY REBATE PROGRAM. I was told you're the person most knowledgeable about this rebated purchase.

Is this correct?

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

[IF NEEDED] Our records show that your company purchased <MEASURE> last year and received a rebate from < UTILITY >. We are calling to do a follow-up study about your firm's participation in this program, which is called the EXPRESS EFFICIENCY REBATE PROGRAM. This survey will take about 15 minutes. I was told you're the person most knowledgeable about this rebated purchase.

Screener

SAMPLE VARIABLES:

CFL_FLAG
MEAS1-n
Del_Flag

A5. Just to check in 2003 did you firm participate in the [UTILITY] Express Efficiency rebate program at this location? [IF NEEDED] This is a program where your business received a rebate for installing one or more energy-efficient products covered under the program
[Q3-1999 Part Survey, A-5]
[2002 : Part, NP]

1	Yes, participated in Express Efficiency as described	A20
2	Yes, participated in Express Efficiency, but at other location	A20
3	Yes, participated in [UTILITY] program, but don't recall that as the name	A15
4	NO, did NOT participate in Express Efficiency program	A10
5	NO, did NOT receive rebate (but did participate in program)	A10
77	Other (specify)	A10
88	Refused	A10
99	Don't know	A10

A10. Is it possible that someone else at your [SERV_ADDR] actually dealt with the energy-efficient product installation? Or maybe you installed an energy-efficient product at your location in 2003, but the contractor you hired dealt with the rebate paperwork?
[Q3a-1999 Part Survey]
[2002 : Part, NP]

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

A15. OK, for the rest of the survey I'll be referring to your participation in rebate program called Express Efficiency.
[Q3b-1999 Part Survey]
[2002 : Part]

A20. I'd like to confirm some information in [UTILITY's] database. Our records show that you had the following equipment installed through the Express Efficiency Program. Is this correct?

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

[ENTER IN NOTES IF THERE ARE DIFFERENCES]

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

A140. What was the operating condition of [MEASURE] before you replaced it? [READ LIST] [REPEAT FOR MULTIPLE MEASURES]
[Q31-1999 PART survey]
[2002 : PART]

1	Old equipment had failed	CON1
2	New equipment did NOT replace anything	CON1
3	OLD equipment was working fine	CON1
4	OLD equipment had problems	CON1
99	[DO NOT READ:] DK/NA	CON1

IF CFL_FLAG = 1

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

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

IF A21 = 2

A22. How many of <COUNTi> were installed?

A23. Why were they put in storage?

RET20. Has any of those <COUNTi> CFL lamps failed or been removed?

1	Yes	A3
2	No	A3
88	Refused	A3
99	Don't Know	A3

A3. Where did you purchase the CFL(s)? [ACCEPT MULTIPLES]

1	Home Depot	A 33
2	Costco	A
3	Orchard Supply Hardware	A
4	ACE Hardware	A
4	Lowe's	A140
5	Long's	A140
6	SaveMart	A140
7	K-Mart	A140
8	Sam's Club	A140
9	Long's	A140
10	Smart & Final	A140
11	Albertson's	A140
12	Yardbirds Home Center	A140
13	Fry's Electronics	A140
14	True Value	A140
15	Willits	A140

16	Food/Maxx	A140
17	Dollar Tree	A140
18	Home Depot	A140
19	Lamps Plus	A140
20	Dixieline Lumber	A140
21	CAL DO IT Center	A140
22	99 Cent Store	A140
23	Valley Supermarket	A140
24	Contractors' Warehouse	A140
25	99 Ranch Markets	A140
26	CONTRACTOR INSTALLED	A140
6	OTHER [Specify:]	A140
99	[DO NOT READ:] DK/NA	A140

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

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

Program Awareness and Participation

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

A25. Besides the Express Efficiency rebate program, are you aware of OTHER programs or resources provided by [UTILITY] in 2003 that were designed to promote energy efficiency for businesses like yours: [IF YES] What types of programs can you recall? [RECALL ALL MENTIONS]
[Q5a-1999 Part Survey]
[2002 : Part, NP]

1	[INTENTIONALLY BLANK]	
2	SPC / Stanford Performance Contracting	A30
3	Business energy audits	A30
4	Distributor incentives	A30
5	Rebate (unspecified)	A30
6	No, not aware of any programs	A30
77	Other programs (SPECIFY) _____	A30
88	Refused	A30
99	Don't know	A30

A30. How did you first learn about the 2003 Express Efficiency Program? [ACCEPT MULTIPLES]
[Q15-1999 Part Survey]
[2002 : Part, NP]

1	Business energy audits	A45

3	Respondent approached utility concerning another matter and learned about the program	A45
4	Contacted by utility rep	A45
5	contractor	A45
6	Utility brochure in mail	A45
7	Bill insert	A45
8	Word-of-mouth from friend or co-workers within the company	A45
9	Word-of-mouth from friends or other business associates outside the company	A45
10	Television, radio, newspaper ad	A45
11	Magazine or trade journal	A45
12	Participation in previous years	A45
13	Manufacturer information/suggestion	A45
14	Community organization such as Chamber of Commerce	A45
77	Other (SPECIFY) _____	A45
88	Refused	A45
99	Don't know	A45

A45. Why did your company participate in the 2003 Express Efficiency program? [DO NOT READ CATEGORIES; ACCEPT MULTIPLE S]
[Q17-1999 Part Survey]
[2002 : PART]

1	Acquiring the latest technology	A53
2	Saving money on electric bills	A53
3	Obtaining a rebate	A53
4	Replacing old or broken equipment	A53
5	Because the program was sponsored by a utility	A53
6	Energy crisis	A53
7	Helping protect the environment	A53
8	Previous experience with other utility programs	A53
9	Recommended by utility account reps	A53
10	Recommended by contractors	A53
11	Participation in previous years	A53
12	Part of a broader facility remodeling/renovation	A53
77	Other (SPECIFY) _____	A53
88	Refused	A53
99	Don't know	A53

IF A25 = 3 SKIP TO A80

A53. Are you aware of [UTILITY]-sponsored energy audits? [IF NEEDED] An audit involves answering questions about your business and its energy use, then receiving a set of recommendations.

1	Yes	A80
2	No	A80
88	Refused	A80
99	Don't know	A80

A80. Did your [UTILITY] representative discuss Express Efficiency rebates with you?
[2002 : PART, NP]

1	Yes	V1
2	No	V1
88	Refused	V1
99	Don't know	V1

Role of Contractors

V1. Did you use a contractor to install the measures rebated through the 2003 Express Efficiency program?
[Q32-1999 PART survey]
[2002 : PART, NP]

1	Yes	V5
2	No	V5
99	[DO NOT READ:] DK/NA	V5

SKIP TO DEL5 IF V1 ne 1

V5. Had you worked with this contractor before participating in the 2003 Express Efficiency program?
[Q34-1999 PART survey]
[2002 : PART]

1	Yes	V40
2	No	V40
99	[DO NOT READ:] DK/NA	V40

V40. How important was the input from the contractor you worked with in deciding which specific equipment to install? Was it

1	Very important	SAT40
2	Somewhat important	SAT40
3	Not at all important	SAT40
99	DK	SAT40

IF V1 = 1 OR 2 THEN SAT40

SAT40. Overall, how satisfied are you with your contractor ? Were you:

1	Very satisfied	DEL5
2	Somewhat satisfied	SAT45
3	Not at all satisfied	DEL5 SAT45
99	DK	DEL5 SAT45

IF SAT40 = 2 OR 3

SAT45. Why do you say that?

DELAMPING

IF DEL ne 1 SKIP TO A130

IF DEL = 1

Now, I have FOUR questions about your delamping job.

DEL1. Why did you decide to delamp?

DEL5. Is amount of lighting better or worse than before your delamping job?

1	Better	DEL10
2	Worse	DEL10
3	Same	DEL10
88	Refused	DEL10
99	Don't know	DEL10

DEL10. When you were considering de-lamping, did you have any concern that the lighting level would be bright enough for you?

1	Yes	DEL15
2	No	DEL15
88	Refused	DEL15
99	Don't know	DEL15

IF DEL 10 = 1 AND V1 = 1
DEL15. What did your contractor do to address this concern?

DEL20. Did contractor take any measurements of lighting level before or after the installation?

1	Yes	
2	No	
88	Refused	
99	Don't know	

PROGRAM EFFECTS

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

A130. Please rate the following factors on your decision to purchase rebated equipment as very influential, somewhat influential or not at all influential The first/next one is …
[2002 : PART]

#	Express Efficiency rebate		PE11
#	Contractor	IF V1 = 1	PE11
#	Your [UTILITY] representative	IF A80 = 1	PE11
#	Rising energy bills		PE11

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

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

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

IF CFL_FLAG = 1

PE13. When your CFLs burn out or fail, will you replace them with CFLs or incandescent?

1	CFLs	PE14
2	Incandescent	PE16
99	DK	PE16

PE14. What if there was no rebate? Would you still install CFLs?

1	Yes	PE15
2	No	PE15
99	DK	PE15

IF PE13 = 1
PE15. How much did the program influence your plans to use CFLs in the future? Was the program VERY, SOMEWHAT, or NOT AT ALL influential

1	VERY influential	PE16
2	SOMEWHAT influential	PE16
3	NOT AT ALL influential	PE16
99	DK	PE16

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

PE16. Is there any equipment that you are considering or have installed in the past that is **energy efficient** but does not qualify for an Express rebate?

1	Yes	PE17
2	No	PE17
88	Refused	PE17
99	Don't know	PE17

PE17. What is that equipment?

PE47. Were you aware that rebate applications are online at your [UTILITY] website?
[2002 : PART, aware NP]

1	Yes	PE50
2	No	PE55
88	Refused	PE61
99	Don't know	PE61

PE50. Did you download a rebate application off your utility's website?
[2002 : PART, aware NP]

1	Yes	PE61
2	No	PE61
88	Refused	PE61
99	Don't know	PE61

PE61. Who filled out your application?

1	Me	PE62
2	My contractor	PE62
88	Refused	PE62
99	Don't know	PE62

PE62. Who did the rebate check go to?

1	Me	PE63
2	My contractor	PE63
77	Other (SPECIFY) _____	PE63
88	Refused	PE63
99	Don't know	PE63

PE63. What percent of the cost did the rebate check cover? [IF NEEDED: Cost means total cost of the job, including equipment and labor] [READ]

1	0-10%	PE64
2	11-25%	PE64
3	26-49%	PE64
4	50-74%	PE64
5	75-99%	PE64
6	100% or free	PE64
88	Ref	PE64

99	Don't know	PE64

IF PE61 = 1

PE64. Would you prefer to submit your rebate application electronically (online) or in the mail (on paper) to your [UTILITY]

PE65. Did you make a reservation to reserve funds for a rebate on your equipment?

1	Yes	PE66
2	No	PE67
88	Refused	PE67
99	Don't know	PE67

PE66. How satisfied were you with that experience?

1	Very satisfied	PE67
2	Somewhat satisfied	PE67
3	Not at all satisfied	PE67
88	Refused	PE67
99	Don't know	PE67

IF PE66 = 3

PE66A. Why do you say that?

PE55. Did you buy more energy efficient equipment as a result of the program?

1	Yes	PE60
2	No	PE60
88	Refused	PE60
99	Don't know	PE60

PE60. What did you purchase? [PROBE FOR SPECIFICS] (RECORD VERBATIM)

77	Other (specify)		AC20
99	Don't know/refused		AC20

INFLUENCE OF REBATE

We'd like to ask a some questions about the {MEAS_DESC} that you installed.

REB23. Before you began shopping, were you aware of the different levels of energy efficiency for your item?

1	Yes	REB25
2	No	REB25
88	Refused	REB25
99	Don't know	REB25

REB25. Were you aware of the rebate **before or after** you began shopping for [MEAS1]?

1	Before	REB30
2	After	REB30
3	Same time	REB30
88	Refused	REB30
99	Don't know	REB30

REB30. Were you **aware of the rebate before or after you** decided on purchasing equipment that qualified for the rebate?

1	Before	REB35
2	After	REB35
3	Same time	REB35
88	Refused	REB35
99	Don't know	REB35

REB35. When you started shopping for [MEAS1, had you already decided you wanted energy efficient equipment?

1	Yes	REB50
2	No	REB50
77	Other [SPECIFY]:_____	REB50
88	Refused	REB50
99	Don't know	REB50

REB50. Which of the following three statements best describes the actions you would have taken had the rebate **NOT** existed**:**

1	We would bought NO equipment	REB 55
2	We would have bought the SAME **energy efficient** equipment	REB 55
3	We would have bought standard equipment	REB 55
88	Refused	REB 55
99	Don't know	REB 55

IF REB50 = 2
REB55. If the rebate was not available, when would you have bought [MEAS1]:

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

IF REB55 = 3

REB60. How many years would you have waited before buying [MEAS1] if the rebate had not existed?

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

SKIP IF REB50 ne 2

REB63. If the rebate was **half** of the amount that you received, would your company have: [READ LIST]

1	Bought NO equipment	REB 65
2	Bought the SAME HIGH efficiency equipment	REB 65
3	Bought STANDRD or less efficient equipment	REB 65
4	Bought the SAME, but at a LATER date	REB 65
77	Other (SPECIFY)	REB 65
88	Refused	REB 65
99	Don't know	REB 65

SATISFACTION

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

SAT1	Overall satisfaction with the 2003 Express Efficiency program experience	
SAT15	satisfaction with the **application process**	
SAT30	satisfaction with the **bill savings**	
SAT40	satisfaction with rebate amount	
SAT55	Satisfaction with the equipment you purchased and its performance	
SAT65	SATISFACTION with rebate turnaround time	IF PE62 = 1
IF MEAS1 = delamp		
SAT60	Satisfaction with amount of lighting after delamping	

IF SAT1-60 = 3 (NOT AT ALL SATISFIED)

SAT44. Why do you say that?

CFL OP HOURS

[INTERNAL: FROM 1998 PART SURVEY]

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

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

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

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

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

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

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

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

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

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

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

HR040. How about Saturdays?

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

HR040b. On Saturday your indoor lights are on from:

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

HR040c On Saturday your indoor lights are on until:

&HR40F	Hours on UNTIL (use 24 hour format eg 0700)	HR050

88	Refused	HR050
99	Don't know	HR050

HR050. And Sundays?

1	Never On	HR059
2	On 24 Hrs	HR059
3	On part of the day	HR050b
4	Same as Saturday lighting schedule	HR059
5	Same as Weekday lighting schedule	HR059
6	Open by appointment	HR059
88	Refused	HR059
99	Don't know	HR059

HR050b. On Sunday your indoor lights are on from:

&HR50F	Hours on FROM (use 24 hour format eg 0700)	HR050c
88	Refused	HR059
99	Don't know	HR059

HR050c On Sunday your indoor lights are on until:

&HR50T	Hours on UNTIL (use 24 hour format eg 0700)	HR059
88	Refused	HR059
99	Don't know	HR059

[ASK IF &BTYPE=1, ELSE SKIP TO HR070]

HR059. We realize that you may operate your facility differently when classes are not in session. Is the indoor lighting schedule for your facility different when classes are not in session?

1	Yes	HR060
2	No	HR070
8	Refused	HR070
9	Don't Know	HR070

HR060. I'd like to ask the same set of questions for your indoor lighting schedule when students are not in the classroom. What are the weekday hours that your indoor lights are on?

1	On 24 Hrs	HR062
2	Never on	HR062
3	On part of the day	HR060b
88	Refused	HR062
99	Don't know	HR062

HR060b. Monday through Friday, the indoor lights are on from:

&HR60F	Hours on FROM (use 24 hour format eg 0700)	HR060c
88	Refused	HR062
99	Don't know	HR062

HR060c. Monday through Friday, your indoor lights are on until:

&HR30F	Hours on UNTIL (use 24 hour format eg 0700)	HR060c
88	Refused	HR062
99	Don't know	HR062

HR062. How about Saturdays?

1	On 24 Hrs	HR064
2	Never on	HR064

3	On part of the day	HR062b
4	Same as weekday lighting schedule	HR064
88	Refused	HR064
99	Don't know	HR064

HR062b. On Saturday your indoor lights are on from:

&HR62F	Hours on FROM (use 24 hour format eg 0700)	HR062c
88	Refused	HR064
99	Don't know	HR064

HR062c. On Saturday your indoor lights are on until:

&HR62T	Hours on UNTIL (use 24 hour format eg 0700)	HR064
88	Refused	HR064
99	Don't know	HR064

HR064. And Sundays?

1	Never On	HR070
2	On 24 Hrs	HR070
3	On part of the day	HR064b
4	Same as Saturday lighting schedule	HR070
5	Same as Weekday lighting schedule	HR070
88	Refused	HR070
99	Don't know	HR070

HR064b. On Sunday your indoor lights are on from:

&HR64F	Hours on FROM (use 24 hour format eg 0700)	HR064c
88	Refused	HR070
99	Don't know	HR070

HR064c On Sunday your indoor lights are on until:

&HR50T	Hours on UNTIL (use 24 hour format eg 0700)	HR070
88	Refused	HR070
99	Don't know	HR070

EUL Retention Battery

IF CFL_FLAG = 1

RICHARD: CAN WE DISPLAY THE TOTAL COUNT, AND THE ANSWERS TO EACH OF THE FAILURE, REMOVAL AND REPLACEMENT QUESTIONS? SO THAT THE INTERVIEWER SEES WHEN THE THREE CATEGORIES ADD UP TO MORE THAN THE TOTAL?

IF RET20 = 1 and A22 ne 888 or A22 ne 99

We'd like to ask you about some of the CFLs you've installed. You mentioned that some have failed or been removed.

RET30. Overall, how many of the <COUNTi> CFL lamps you installed have FAILED OR been REMOVED?

HGONE	Enter number, from 1 to <COUNTi>	RET40
87	Answer as a percentage of <COUNTi>	RET35
88	Refused	F1
99	Don't Know	F1

[READ THE FOLLOWING]
Let's break down into the number CFL of lamps that failed or were removed.

- A **failed** lamp means the light does **not** switch on
- A **removed** lamp means it's been taken out of its original location EVEN if it's still working. For example: taking out a light during a remodel.

RET40. How many CFL lamps have FAILED?

IF NEEDED: If the CFL doesn't allow the lights to switch on, then it has failed. If it fails and it is replaced by something else, then it is still considered a failure.

1	None	RET70
HFAILED	Enter number, from 1 to <HGONE>	RET50
87	Answer as a percentage of <COUNTi>	RET45
88	Refused	F1
99	Don't Know	F1

RET50. Can you recall when this failure FIRST occurred? Was it this year or last year?

1	2003	RET50b
2	2004	RET50b
88	Refused	RET50d
99	Don't Know	RET50d

RET50b. And what month?

1	January	RET50d
2	February	RET50d
3	March	RET50d
4	April	RET50d
5	May	RET50d
6	June	RET50d
7	July	RET50d
8	August	RET50d
9	September	RET50d
10	October	RET50d
11	November	RET50d
12	December	RET50d
88	Refused	RET50c
99	Don't Know	RET50c

RET50c. Can you recall what season it was?

1	Spring	RET50d
2	Summer	RET50d
3	Fall	RET50d
4	Winter	RET50d
88	Refused	RET50d
99	Don't Know	RET50d

RET50d. And can you recall what type of failure that was? Was it… [READ LIST]?

1	Manufacturing Defect	RET55
2	Improper Installation	RET55
3	Improper Maintenance	RET55
4	Accident/Human Error	RET55
5	Other – RECORD VERBATIM	RET55
99	Don't Know/Unable to determine	RET55

RET55. Were there other failures that occurred at other times?

1	Yes	RET60
2	No	RET62
88	Refused	RET62
99	Don't Know	RET62

RET60. Can you recall when the LAST failure occurred? Was it this year or last year?

1	2003	RET60b
2	2004	RET60b
88	Refused	RET60d
99	Don't Know	RET60d

RET60b. And what month?

1	January	RET60d
2	February	RET60d
3	March	RET60d
4	April	RET60d
5	May	RET60d
6	June	RET60d
7	July	RET60d
8	August	RET60d
9	September	RET60d
10	October	RET60d
11	November	RET60d
12	December	RET60d
88	Refused	RET60c
99	Don't Know	RET60c

RET60c. Can you recall what season it was?

1	Spring	RET60d
2	Summer	RET60d
3	Fall	RET60d
4	Winter	RET60d
88	Refused	RET60d
99	Don't Know	RET60d

RET60d. And can you recall what type of failure that was? Was it… [READ LIST]?

1	Manufacturing Defect	RET62
2	Improper Installation	RET62
3	Improper Maintenance	RET62
4	Accident/Human Error	RET62
5	Other – RECORD VERBATIM	RET62
99	Don't Know/Unable to determine	RET62

RET62. Did you replace any of the failed CFLs?

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

RET64. Were they replaced with … [READ LIST]?

1	Incandescent bulbs	RET66
2	CFLs	RET66
3	Other – Specify	RET66
99	Don't Know/Unable to determine	RET66

RET66. How many of the failed CFL lamps were replaced under warranty?

1	None	RET70
2	Enter number, from 1 to <HFAILED>	RET70
87	Answer as a percentage of <HFAILED>	RET68
88	Refused	RET70
99	Don't Know	RET70

RET68. What percent of the FAILED CFLs were replaced under warranty?

1	Enter percentage from 0 to 100%	RET70
88	Refused	RET70
99	Don't Know	RET70

RET70. Let's now talk about CFL lamps that have been removed. Can you remember how many CFLs were removed, if any?

IF NEEDED: A lamp has been **removed** if it was taken out of its original location when it was still functional (for example: taking out a light during a remodel).

1	None	F1
HREMOVED	Enter number, from 1 to <HGONE>	RET80
87	Answer as a percentage of <COUNTi>	RET75
88	Refused	T&T
99	Don't Know	T&T

RET80. Can you recall when this removal FIRST occurred? Was it this year or last year?

1	2003	RET80b
2	2004	RET80b
88	Refused	RET80d
99	Don't Know	RET80d

RET80b. And what month?

1	January	RET80d
2	February	RET80d
3	March	RET80d
4	April	RET80d
5	May	RET80d
6	June	RET80d
7	July	RET80d
8	August	RET80d
9	September	RET80d
10	October	RET80d
11	November	RET80d
12	December	RET80d
88	Refused	RET80c
99	Don't Know	RET80c

RET80c. Can you recall what season it was?

1	Spring	RET80d
2	Summer	RET80d
3	Fall	RET80d
4	Winter	RET80d
88	Refused	RET80d
99	Don't Know	RET80d

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

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

RET82. What did you do with the lamps you removed? [ACCEPT MULTIPLES]

1	Threw in trash	RET85
2	Storage	RET85
3	Returned	RET85
4	Gave away	RET85
5	Other – RECORD VERBATIM	RET85
99	Don't know	RET85

RET85. Were there other removals that occurred at other times?

1	Yes	RET90
2	No	RET92
88	Refused	RET92
99	Don't Know	RET92

RET90. Can you recall when the LAST removal occurred? Was it this year or last year?

1	2003	RET90b
2	2004	RET90b
88	Refused	RET90d
99	Don't Know	RET90d

RET90b. And what month?

1	January	RET90d
2	February	RET90d
3	March	RET90d
4	April	RET90d
5	May	RET90d
6	June	RET90d
7	July	RET90d
8	August	RET90d
9	September	RET90d
10	October	RET90d
11	November	RET90d
12	December	RET90d
88	Refused	RET90c
99	Don't Know	RET90c

RET90c. Can you at least recall what season it was?

1	Spring	RET90d
2	Summer	RET90d
3	Fall	RET90d
4	Winter	RET90d
88	Refused	RET90d
99	Don't Know	RET90d

RET90d. And can you recall why they were removed? Was it… [READ LIST]?

1	Unsatisfactory Performance	RET92
2	Savings not worth the effort	RET92
3	Remodeling disabled the installation	RET92
4	Type of business changed	RET92
5	Moved	RET92
6	Equipment upgrade	RET92
7	Other – RECORD VERBATIM	RET92
99	Don't Know/Unable to determine	RET92

RET92. Did you replace any of the removed CFLs?

1	Yes	RET94
2	No	F1
88	Refused	F1
99	Don't Know	F1

RET94. Were they replaced with …[READ LIST]?

1	Incandescent bulbs	F1
2	CFLs	F1
3	Other - SPECIFY	F1
99	Don't Know/Unable to determine	F1

Conservation

I'm going start with actions your business may have taken to reduce or manage your energy use.

CON1. Other than installing new equipment, have you taken any energy conservation actions since January 2003 to reduce your overall energy use [IF NEEDED:, such as routinely turning off lights or setting the thermostat higher when using the air conditioning]
[CON10-P923]
[2002 : PART, NP]

1	Yes	CON5
2	No	A25
88	Refused	A25
99	Don't know	A25

CON5. What energy conservation actions have you taken? [SELECT ALL THAT APPLY] [DO NOT READ]
[CON20-P923]
[2002 : PART, NP]

1	Turn off office equipment such as PCs, monitors, printers and copiers when not in not in night and during the weekend	CON20
2	Set thermostats lower when heating and higher when using the air conditioning	CON20
3	Schedule high electrical energy-use processes during off-peak periods where feasible.	CON20
4	Turn off any lights that are not being used, for example, unused offices and conference r	CON20
5	Turn down the remaining lighting levels if you can	CON20
6	(If available) Use dimmer switches to lower lights	CON20
7	Set air conditioning thermostats to pre-cool spaces at off-peak times	CON20
8	Establish a system to alert employees of expected high demand days including, but not limited to E-mail, voice mail, or public address announcement to all employees	CON20
9	Reprogram EMS schedule	CON20
10	Turn off your computer if you are out of the office for more than a few minutes	CON20
11	Set computer to low power stand bye mode	CON20
12	Turn off personal appliances, such as coffee pots and radios	CON20
13	Use e-mail to distribute documents instead of faxes and copiers	CON20
14	Make copies double-sided	CON20

15	Wear comfortable business attire. Dress appropriately for warmer temperatures	CON20
16	Run backup generator at times of peak demand	CON20
17	Other (SPECIFY)	CON20

CON20. By roughly how much do you think the conservation actions you've taken have reduced your overall energy usage?
[CON25-P923]
[2002 : PART, NP]

1	0 to 5 percent	A25
2	6 to 10 percent	A25
3	11 to 15 percent	A25
4	16 to 20 percent	A25
5	21 to 30 percent	A25
6	More than 30 percent	A25
88	Refused	A25
99	Don't know	A25

FIRMOGRAPHICS

F20. In the last two years, have there been any changes at your facility that increased or decreased your energy consumption by 10% or more?

1	Yes	
2	No	
88	Refused	
99	Don't know	

F25. Has the square footage changed?

1	Yes	
2	No	
88	Refused	
99	Don't know	

F30. Has the number of employees changed?

1	Yes	
2	No	
88	Refused	
99	Don't know	

F1. Can you estimate the total square footage of your facility at this [SERV_ADDR] to be …?
[Q84-P923]
[2002 : PART, NP]

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

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

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

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

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

1	Office	F20
2	Retail (non-food)	F20
3	College/university	F20
4	School	F20
5	Grocery store	F20
6	Convenience store	F20
7	Restaurant	F20
8	Health care/hospital	F20
9	Hotel or motel	F20
10	Warehouse	F20
11	Personal Service	F20
12	Community Service/Church/Temple/Municipality	F20
13	Industrial Process/Manufacturing/Assembly	F20
14	Condo Assoc/Apartment Mgmt	F20
15	Agriculture	F20
77	Other (SPECIFY)	F20
99	DK/Refused	F20

R5. Does your business own or lease the facility?
[Q3-P923]
[2002 : PART, NP]

1	Own	R20
2	Lease/rent	R10
99	DK/NA/refused	R10

L5. Is a language other than English spoken at your business?
[2002 : PART, NP]

1	Yes	L10
2	No	F1
88	Refused	F1
99	Don't know	F1

L10. Other than English, what language is primarily spoken at your business? [ACCEPT MULTIPLES]
[2002 : PART, NP]

1	Spanish	F30
2	Chinese	F30
3	Korean	F30
4	Vietnamese	F30
5	Japanese	F30
6	Indian	F30
77	Other (SPECIFY)	F30
88	Refused	F30
99	Don't know	F30

PY2003 EXPRESS EFFICIENCY LIGHTING CONTRACTOR SURVEY

SCREENER

Hello, my name is _____ and I am calling on behalf of [UTILITY]. We are contacting lighting contractors to learn about their experience with the Express Efficiency rebate program. Our records indicate that you've done some lighting jobs through Express Efficiency, and we'd like your opinions on the program, its rebate levels, how it's worked for you, what you'd like to see improved. This should take about 15 minutes.

Let me start with a couple of questions about the type of lighting products you install.

S1. What do you sell and/or install?

1	T8s	S2
2	4 foot fluorescent lamps/fixtures	S2
3	Compact fluorescent lamps/CFLs	S2
4	HID lamps/fixtures	S2
5	Occupancy sensors	S2
6	Timeclock	S2
77	Other (specify)	S2
88	Refused	T&T
99	Don't know	T&T

[T&T IF NOT LIGHTING RELATED]

S2. What percent of your overall sales in 2003 was from either selling or installing lighting equipment to commercial/industrial customers?

[IF C/I SALES LESS THAN 20%, THEN T&T]

S3. What percent of the full-sized fluorescent lamps and ballasts that your company installed in 2003 were part of retrofit projects? [IF NEEDED: % installed on projects where you replaced existing lighting equipment with new lighting equipment]

_____ % retrofit

[IF LESS THAN 50%, THEN T&T]

S4. Are you familiar with [UTILITY's] Express Efficiency program?

1	Yes	S5
2	No	T&T
88	Refused	T&T
99	Don't know	T&T

IF S1 = 3, else skip to S10

S6. Approximately how many CFLs did your company sell in 2003?

_____ # of CFLs

S7. What percent of the CFLs you install are integral?

[INTEGRAL (DEFINITION): THE LAMP AND THE BALLAST ARE ONE UNIT, AS OPPOSED TO A MODULAR CFL WHERE THE LAMP IS SEPARATE FROM THE BALLAST

_____ % integral

S8. What percent of the CFLs replace existing CFLs (as opposed to incandescents)?

IF S1 = 3
S8anu. When you install CFLs, do you usually leave extra lamps for customers so they can replace any future CFL burnouts?

1	Yes	S8a
2	No	S9
88	Refused	S9
99	Don't know	S9

IF S8a = 1
S8bnu. About how many bulbs do you leave behind for future replacement. I am looking for a percentage of job size? [IF NEEDED: For example, if you installed 100 bulbs and left 10 extras behind, that's 10% of job size]

___ % of job size

S9b. What percent of the **compact fluorescents** that your company installed in 2003 were through the Express Efficiency Program?

Through Program _____ %

Outside Program _____ %

100%

IF S1 = 1 OR 2 else skip to S15
S10. Approximately how many T-8 ballasts did your company sell in 2003?

_____ # of T-8's

S11A. Did you do any delamping jobs last year?

1	Yes	S11
2	No	S12
88	Refused	S12
99	Don't know	S12

S11. What % of your T8 retrofits include delamping?
_____ % delamp

S12. What % of your T8 retrofits are super T-8s?
_____ % super T-8

S13. What percent of the **T-8 retrofits** that your company did in **2003** were through the

Express Efficiency Program?

Through Program _____ %

Outside Program _____ %

100%

IF S11A = YES

S14. What percent of the **delamping jobs** that your company did in **2003** were through the Express Efficiency Program?

Through Program _____ %

Outside Program _____ %

100%

ASK ALL RESPONDENTS

S15. Thinking about all the jobs you did through the Express Efficiency program in 2003, what is the breakdown

(in percent) between:

T8 _____%

CFL _____ %

other _____ %

100%

SALES

We would like your opinions on some features of the program, such as sales.

SL1. Are you aware that the utilities have sales where rebate amounts increase?

1	Yes	SL2
2	No	EE1
88	Refused	EE1
99	Don't know	EE1

SL2. Are you expecting that there will be another sale this year?

1	Yes	SL2Y
2	No	SL2N
88	Refused	EE1
99	Don't know	EE1

SL2Y. Why do you say that?

SL2N. Why do you say that?

ENERGY EFFICIENCY PROMOTION

EE1. On average, what % of your customers REQUEST higher energy efficiency equipment?
[IF NEEDED: equipment that qualifies for utility rebates]
_____ % request

EE2. How often do you RECOMMEND higher efficiency equipment to your customers?
[READ]

1	Always	EE3
2	Very often	EE3
3	Sometimes	EE3
4	Seldom	EE3
5	Never	EE3
88	Refused	EE3
99	DK	EE3

SKIP IF EE2 = 5 OR 88 OR DK

EE3. When you are trying to convince a customer to buy the high efficiency option, what is your MOST effective selling point:

1	Save energy	DE1
2	Save money	DE1
3	Rebate	DE1
4	Higher quality equipment	DE1
88	Refused	DE1
99	DK	DE1

DELAMPING

IF S11A = 1 else skip to P1

DE1. Thinking about the T8 retrofits that you do, for what % of those retrofits would delamping be applicable?
_____ % delamp applicable

DE2. What % of the time does the customer choose to delamp when it's applicable?
_____ % customer does delamping

DE6. Is delamping difficult to sell because of additional cost?

1	Yes	DE7
2	No	DE7
88	Refused	DE7
99	Don't know	DE7

DE7. When you recommend delamping, do customers have concerns about what the lighting levels

will be?

1	Yes	DE8
2	No	DE10
88	Refused	DE12
99	Don't know	DE12

IF DE7 = 1

DE8. What are they?

DE9. How do you overcome these concerns?

DE10. If the Express Efficiency program required pre and post light level readings, would that help overcome customers' concerns?

1	Yes	DE10Y
2	No	DE10N
88	Refused	DE12
99	Don't know	DE12

DE10Y. Why do you say that?

DE10N. Why do you say that?

DE12. If the Express Efficiency program required you to document pre and post wattages on the application, would you be more or less likely to apply for a delamping rebate ?

1	More likely	DE13
2	Less likely	DE13
3	Same / no difference	DE13
88	Refused	DE13
99	Don't know	DE13

DE13. Did you adopt any practices to make sure lighting quality was sufficient?

1	Yes	DE14
2	No	DE3
88	Refused	DE3
99	Don't know	DE3

[IF DE`13 = 1]

DE14. What efforts did you make?

DE3. In cases where a customer chooses NOT to delamp where it's applicable, what is the primary reason why they don't?

1	Cost	DE4
2	Lighting level	DE4

3	Other	DE4
88	Refused	DE4
99	DK	DE4

DE4. What could the Express Efficiency program do to overcome this issue?

DE15. Are you aware that the incentives for delamping **increased** in late 2003?

1	Yes	DE16
2	No	DE19
88	Refused	DE19
99	Don't know	DE19

DE16. Has the higher rebate affected the amount of delamping that you do?

1	Yes	DE17
2	No	DE19
88	Refused	DE19
99	Don't know	DE19

[IF DE16 = YES]
DE17. What percent has your delamping activities increased?
_____ % increase

DE19. If rebates increased, do you think more customers would be willing to delamp?

1	Yes	DE20
2	No	P1
88	Refused	P1
99	Don't know	P1

DE20. What amount should the rebate be to encourage more customers to delamp?
[IF NEEDED: Dollar rebate per lamp]
_____ $ rebate

NOTE: Currently rebates are $6 per lamp for permanent removal of a 4ft fluorescent lamp.

INFLUENCE OF REBATE ON PARTICIPATION

In late 2003, the utilities increased rebates for many of their measures. The utilities did this with the expectations of having rebates stay constant throughout the year. They are not expected to have any sales promotions. The utilities did this in part to help manage vendors' and customer expectations about program rebate levels.

P1. From what you know of the current rebate levels, do you feel they are appropriately set to get customers to improve the efficiency of lighting in their businesses?

1	Yes	P2
2	No	P2
88	Refused	P2
99	Don't know	P2

P2. If you reduced the rebate on some measures in order to increase the rebate on other measures, which measures would you **increase** rebates for?

[RICHARD: HERE'S YOUR LIST OF MEASURES SO INTERVIEWER SPENDS LESS TIME POSTCODING:

01	CFLs LAMPS (general)	
02	CFLs (5-13 watts)	
03	CFLs (14-26 watts)	
04	CFLs (27+ watts)	
05	COMPACT AND LINEAR FLUORESCENT FIXTURES	
06	5-13 watt FLUORESCENT FIXTURE	
07	14-26 watt FLUORESCENT FIXTURE	
08	27-65 watt FLUORESCENT FIXTURE	
09	66-90 watt FLUORESCENT FIXTURE	
10	90+ watt FLUORESCENT FIXTURE	
11	LINEAR FLUORESCENT ELECTRONIC BALLASTS	
12	T8 linear fluorescent lamps with electronic ballasts	
13	2-foot T8	
14	3-foot T8	
15	4-foot T8	
16	8-foot T8	
17	HID FIXTURES	
18	CERAMIC METAL HALIDE	
19	HIGH BAY	
20	OCCUPANCY SENSORS	
21	PHOTOCELLS	
22	TIME CLOCKS	
23	LED EXIT SIGNS	
24	WOULD NOT REBATE ON SOME MEASURES....	

P2a. Why do you say that?

P3. Which measures would you **decrease** rebates for?
USE SAME LIST as P2

P3a. Why do you say that?

IF S1 = 3 else skip to p8

P4. Right now, the rebate on a 14-26 watt CFL is $3.50 a lamp. If that rebate was cut in half, what percentage of your sales do you think you would lose, if any?

_____ % decrease

-99 don't know

[IF P4 = 99]

P5. If don't know: what do you think would be the effect on your CFL sales? [READ RESPONSES]

1	No effect	P6
2	Small decrease in sales	P6
3	Large decrease in sales	P6
4	Other	P6
88	Refused	P6
99	Don't know	P6

P6. If the rebate doubled to $7, what percentage more CFLs do you think you could install?

_____ % increase

-99 don't know

[IF P6 = 99]

P7. What do you think would be the effect on your CFL sales? [READ RESPONSES]

1	No effect	
2	Small increase in sales	
3	Large increase in sales	
4	Other	
88	Refused	
99	Don't know	

IF S1 = 1 OR 2 else skip to CMP1

P8. Right now, the rebate on a 4-foot T-8 is $4.25 a lamp. If the rebate was cut in half, what percentage of your sales do you think you would lose, if any?

_____ % decrease

-99 don't know

[IF P8 = 99]

P9. What do you think would be the effect on your T-8 sales? [READ RESPONSES]

1	No effect	P6
2	Small decrease in sales	P6
3	Large decrease in sales	P6
4	Other	P6
88	Refused	P6
99	Don't know	P6

IF S1 = 1 OR 2

P10. If the 4-foot T-8 rebate doubled to $8.50, what percentage more T-8s do you think you could install?

_____ % increase

-99 don't know

[IF P10 = 99]

P11. What do you think would be the effect on your T-8 sales? [READ RESPONSES]

1	No effect	
2	Small increase in sales	
3	Large increase in sales	
4	Other	
88	Refused	
99	Don't know	

THIRD PARTY COMPETITION

CMP1. Do you participate in rebate programs other than Express Efficiency?

1	Yes	
2	No	
88	Refused	
99	Don't know	

IF CMP1 = 1
CMP5. Which rebate programs do you participate in?

IF CMP1 = 1
CMP10. Do you do more jobs through Express Efficiency or through other programs?

1	Express	
2	other	
88	Refused	
99	Don't know	

IF CMP10 = 1
CMP15. What program do you work with the most?

IF CMP10 = 2
CMP20. Why do you do more jobs through other programs?

IF CMP10 = 1
CMP25. Why do you do more jobs through Express?

APPLICATION PROCESS

Now we have a few questions about the application process.

AP1. Would you prefer to submit applications electronically (paperless) or in the mail (on paper)?

1	Electronic	
2	On paper	
88	Refused	
99	Don't know	

AP 2. How satisfied are you with rebate process? [READ RESPONSES]

1	Very satisfied	
2	Somewhat satisfied	
3	No at all satisfied	
88	Refused	
99	Don't know	

AP 3. Would you make any changes?

AP 4. How satisfied are you with reservation process? [READ RESPONSES]

1	Very satisfied	
2	Somewhat satisfied	
3	No at all satisfied	
88	Refused	
99	Don't know	

AP 5. Would you make any changes?

IMPROVEMENTS

IM 1. Are there any lighting products or technologies currently not covered under Express Efficiency that you think should be included?

FIRMOGRAPHICS

We'd like to wrap up with a few questions about your firm's sales.

F1. About how many full time workers do you employ at this location?

_____ #

F2. Approximately what were the total sales of all products and services for your company in 2003 at this location?

_____ $

F3. What percent of your lighting projects are provided to each of the following

1	% other contractors	
2	% direct to end users	
3	% developers	
77	Other [IF NEEDED]	
88	Refused	
99	Don't know	

F4. Which of the following best describes your firm: [READ RESPONSES]

1	Electrical contractor	
2	Energy service company	
3	Lighting management company	
77	Other [IF NEEDED]	
88	Refused	
99	Don't know	

APPENDIX H:

CFL OPERATING HOURS AND EFFECTIVE USEFUL LIFE ASSESSMENT

APPENDIX H
CFL OPERATING HOUR AND EFFECTIVE USEFUL LIFE ASSESSMENT

H1. INTRODUCTION

This appendix summarizes the assessment of annual hours of operation associated with the compact fluorescent lamps (CFLs) that have been installed as part of the 2003 Statewide Express Efficiency Program. In addition, a secondary objective of this portion of the study was to use the resulting annual hours of operation, in conjunction with manufacturer's rated lifetime, to develop an estimate of the CFLs effective useful life, as installed through the 2003 Express Efficiency Program. Although Express Efficiency offers qualifying customers financial incentives (rebates) for the purchase of a variety of energy-efficient technologies, CFLs comprised nearly half of the program's overall net resource benefits in 2003.

Currently, energy savings assumptions for CFLs are based on evaluations conducted on previous energy efficiency programs conducted in the state, some of which were conducted in the mid to late 1990's. Over the past five years, CFL technology and its application have changed significantly. Furthermore, the focus of the Express Efficiency program has also changed, with more emphasis on smaller customers. Given these changes in participation pattern, technology, and application, it is widely believed that the current estimates for annual hours of operation may no longer represent what is typically being installed through the Express Efficiency program. Furthermore, the measure life assumptions for CFLs installed through the Express Efficiency program are based on modular CFLs. However, as many as 95% of all screw-in CFLs installed through the program are now integral, which have manufacturer rated lifetimes that are on the order of about one-quarter that of modular ballasts. Therefore, there is also a strong need to update the measure life, or effective useful life (EUL) for CFLs installed through the Express Efficiency program. The purpose of this study is to address the need for both an updated estimate of the annual hours of operation for CFLs, as well as an estimate of the measure's effective useful life.

It is extremely important to note, however, that the objective of this study is to develop annual operating hours and an EUL specifically for the 2003 Express Efficiency Program. Furthermore, the sample design and overall methodology were all intended to produce a single estimate of annual hours of operation; segment-level results which were developed as intermediate results to increase the overall accuracy of the final program-wide result are not intended for use other than to estimate than the final, program-wide figure. However, although we do not endorse segment-level results, and have emphasized that these results are representative of the 2003 Express Efficiency program, we expect that the results of this study may be used for program planning outside of Express Efficiency. Therefore, we have also developed an estimated operating schedule for all CFLs installed outside of the lodging segment. The Express Efficiency program has had a significant level of participation among the lodging segment over the past four years (where CFLs are installed primarily in guest rooms), a segment that has significantly lower operating hours than the other segments. Therefore, a program that does not target the lodging segment in a way that the Express Efficiency program has would significantly

underestimate its energy savings accomplishments by using these results. To address this issue, we have developed a separate estimate of annual operating hours for CFLs installed through the Express Efficiency Program, and excluded the lodging segment.

Furthermore, it is also important to note that the EUL developed in this study is a function of the annual operating hours. Therefore, the EUL developed as part of this study should not be used in conjunction with different annual operating hour assumptions. Section H3, discusses this more at length and describes how the EUL could be adjusted.

H1.1 APPROACH

Because the overriding objective of this study was to produce a current, accurate, and program-specific estimate of hours of operation for CFLs, an emphasis on primary data guided research activities. Site visits and the installation of lighting loggers used to capture the actual operating schedules for a sample of 60 program participant sites constituted the foundation for this study. The goal of these site visits was to characterize the application of CFLs among participants, and not the general lighting usage at the site. A telephone survey of the same 60 sites was bolstered with a telephone survey of an additional 300 participants by using a comparison of the stated operating schedules to correct for bias in the smaller sample. Lighting schedules developed from the samples were segmented by business type and customer size (demand) and were then aggregated to a program-wide estimate of annual hours of operation using CFL counts from the program tracking database to weight the individual segments.

H1.2 ORGANIZATION

Section H2 of this appendix provides a detailed account of the methods employed to develop the hours of operation and EUL. The section first outlines the sample selection, segmentation, and sources of data, providing full counts of both sites and bulbs for all sources. Next, the section outlines the specific methods used to integrate these data sources, with a focus on how the different data were used to leverage and validate one another.

The final estimates for annual hours of operation and EUL are presented in Section H3 along with summaries of some key intermediate steps. In addition, this section discusses some of the issues that arose during the analysis and presents some alternatives – along with strong caveats – to the overall program estimate.

H2. METHODOLOGY

This section describes the methodology underlying the assessment of the annual hours of operation for the compact fluorescent bulbs (CFLs) installed in the 2003 Express Efficiency Program, and how these values were used to develop an estimate of the CFL's effective useful life (EUL). The section begins with a discussion of sample selection and the different data sources and then provides a detailed explanation of how those sources were integrated to calculate a program-wide estimate of the annual hours of operation and EUL for CFLs.

H2.1 DATA SOURCES

The evaluation of annual hours of operation and EUL relied on the integration of four different sources of data, each of which is described briefly below:

- Lighting Loggers – Loggers installed at the 60 sample sites selected from the overall participant population to assess the actual on-off schedules of program-related CFL installations.

- Telephone Survey – Data from a series of questions (CFL battery) to assess hours of operation for 360 program participants, including the 60 sites with logger installations, which were flagged and treated separately.

- Site Visits – Data collected during the site visit during which the loggers were installed to assess CFL counts, hours of operation, and overall site characteristics. Furthermore, make and model information were gathered in order to determine the manufacturer's rated lifetime for CFLs installed through the program.

- 2003 Program Tracking Data – Counts of bulb installations and customer characteristics for the overall participant population.

The most critical sources for the assessment were the logger data and the telephone survey, which provided the primary basis of comparison for actual schedules (logger data) with stated schedules (survey). Data collected from the site visits provided a means to corroborate the results from the telephone survey and aided in the overall cleaning and validation of the logger data. Finally, Program tracking data provided the final set of weights to allow the expansion of the sample to produce a program-wide estimate of actual and stated schedules.

H2.2 SAMPLE SELECTION

The sample segmentation for this study was intended to draw equal numbers of five different business types (office, retail, restaurant, lodging, and other) and two customer demand sizes (<20 kW and >20 kW) from the various data sources (the 60 logger sites and incremental 300 telephone surveys). These ten segments are found in roughly equal proportions in the program participant population in terms of number of participants, and they represent groups where hours of operation typically show distinct variation in patterns. By ensuring that each segment is represented sufficiently in the sample, the final estimates of hours of operation better

represent the diversity in program participants. The following section covering the primary data collected has detailed summaries of how these segments have been represented by the different sources.

H2.3 PRIMARY COLLECTED DATA

A total of 60 participant sites received lighting loggers. Exhibit H2-1 presents the counts of premises in the logger sample and their respective loggers. Note that the final sample numbers deviated from the initial plan to sample an equal number (6) from each segment. This was due in part to the availability of sites within certain segments. More important, though, was that the business type for some sites was reclassified based on information collected during the site visits. This reclassification was primarily from the sample for the "Other" segment, which was comprised of sites that were genuinely "Other" based on the SIC code as well as sites that had missing values for business type. The site visits were able to clarify the true nature of the premise and in certain cases it was clear that a site should be grouped within a different segment.

Exhibit H2-1
Logger Sites and Loggers by Sample Segment

Business Type / Size	<20 kW		>20 kW		Total	
	Sites	Loggers	Sites	Loggers	Sites	Loggers
Lodging	5	14	4	17	9	31
Office	6	21	9	28	15	49
Other	3	9	4	8	7	17
Restaurant	5	12	10	27	15	39
Retail	7	17	7	21	14	38
Total	26	73	34	101	60	174

Exhibits H2-2 and H2-3 present the number of sites and total bulbs by segment for the logger site sample in terms of counts and as a percentage of the total. The juxtaposition of these tables illustrates the crucial difference between sites and bulbs in terms of how participation is portrayed. For example, within the logger site sample, Lodging represents only 15% of the total sample, but more than 43% of the total bulbs. In contrast, the Restaurant segment represents 25% of the sites but less than 9% of the total bulbs. Note, however, that these proportions are not used as weights in any kind of aggregation and are presented for informational purposes only.

Exhibit H2-2
Logger Sites by Segment

Business Type / Size	<20 kW		>20 kW		Total	
	Sites	% of Total	Sites	% of Total	Sites	% of Total
Lodging	5	8.3%	4	6.7%	9	15.0%
Office	6	10.0%	9	15.0%	15	25.0%
Other	3	5.0%	4	6.7%	7	11.7%
Restaurant	5	8.3%	10	16.7%	15	25.0%
Retail	7	11.7%	7	11.7%	14	23.3%
Total	26	43.3%	34	56.7%	60	100.0%

Exhibit H2-3
Logger Site CFL Installations by Segment

Business Type / Size	<20 kW		>20 kW		Total	
	CFLs	% of Total	CFLs	% of Total	CFLs	% of Total
Lodging	797	9.2%	2,929	33.9%	3,726	43.1%
Office	328	3.8%	1,649	19.1%	1,977	22.9%
Other	73	0.8%	63	0.7%	136	1.6%
Restaurant	197	2.3%	562	6.5%	759	8.8%
Retail	399	4.6%	1,648	19.1%	2,047	23.7%
Total	1,794	20.8%	6,851	79.2%	8,645	100.0%

Exhibits H2-4 and H2-5 present the site counts and CFL installations for the participant telephone survey sample. The final segment counts for this sample, shown in Exhibit H2-4, deviate from the targeted distribution of 30 per segment. This variation, however, is due to the shortage of certain segments in the sampling frame, not any reclassification. The reduction in the overall sample size from 300 to 296 is due to cases where the respondents were unable or refused to provide their operation schedules. The site and bulb counts for the participant survey show distributions similar to the logger sites, with the lodging accounting for a disproportionate number of the overall CFL installations.

Exhibit H2-4
Telephone Survey Sites by Segment

Business Type / Size	<20 kW		>20 kW		Total	
	Sites	% of Total	Sites	% of Total	Sites	% of Total
Lodging	16	5.4%	31	10.5%	47	15.9%
Office	29	9.8%	37	12.5%	66	22.3%
Other	32	10.8%	30	10.1%	62	20.9%
Restaurant	22	7.4%	33	11.1%	55	18.6%
Retail	36	12.2%	30	10.1%	66	22.3%
Total	135	45.6%	161	54.4%	296	100.0%

Exhibit H2-5
Telephone Survey CFLs by Segment

Business Type / Size	<20 kW		>20 kW		Total	
	CFLs	% of Total	CFLs	% of Total	CFLs	% of Total
Lodging	3,593	8.8%	11,770	28.7%	15,363	37.5%
Office	870	2.1%	13,389	32.6%	14,259	34.8%
Other	825	2.0%	2,502	6.1%	3,327	8.1%
Restaurant	852	2.1%	3,423	8.3%	4,275	10.4%
Retail	587	1.4%	3,204	7.8%	3,791	9.2%
Total	6,727	16.4%	34,288	83.6%	41,015	100.0%

The distribution of CFL installations for the overall program, which are presented in Exhibit H2-6, have much more relevance to the study because they represent the final weights used to aggregate the segment level operating hours into a single, program-wide figure. Note that the large lodging and large other segments account for more than 50% of total bulbs, even though they only represent around 22% of the total participants, as shown in Exhibit H2-5. The operating schedules for these two segments, then, will contribute greatly to the final assessment of hours of operation.

Exhibit H2-6
Program Tracking Sites by Segment

Business Type / Size	<20 kW		>20 kW		Total	
	Sites	% of Total	Sites	% of Total	Sites	% of Total
Lodging	220	3.7%	572	9.5%	792	13.2%
Office	530	8.8%	522	8.7%	1,052	17.5%
Other	1,129	18.8%	833	13.8%	1,962	32.6%
Restaurant	346	5.8%	689	11.5%	1,035	17.2%
Retail	800	13.3%	375	6.2%	1,175	19.5%
Total	3,025	50.3%	2,991	49.7%	6,016	100.0%

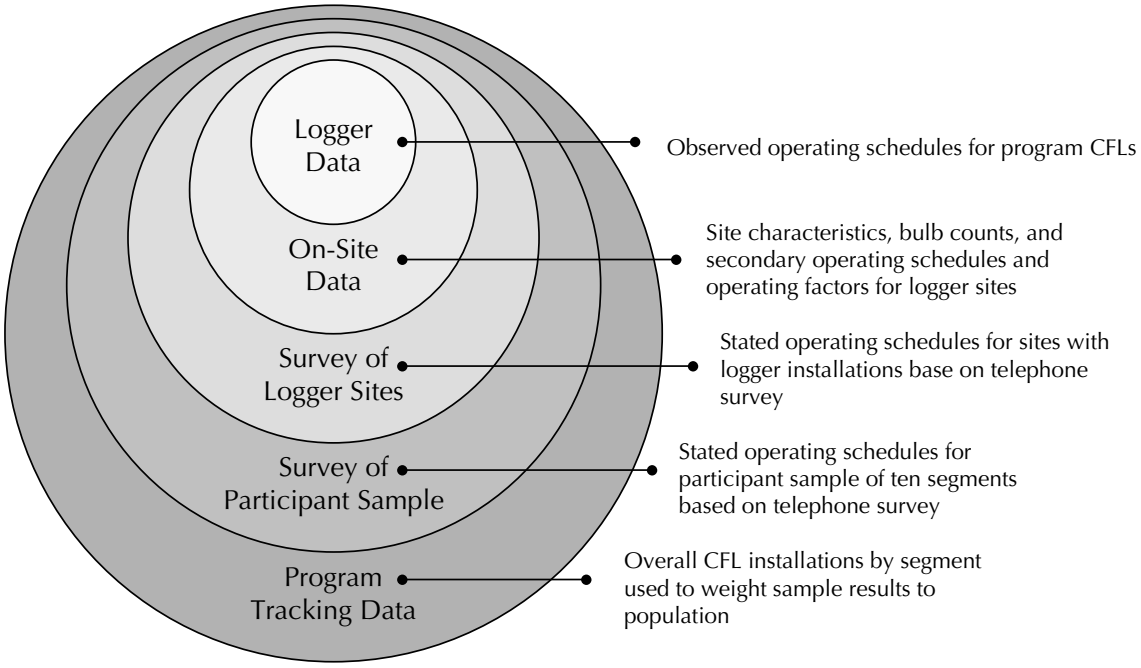
Exhibit H2-7
Program Tracking CFLs by Segment

Business Type / Size	<20 kW		>20 kW		Total	
	CFLs	% of Total	CFLs	% of Total	CFLs	% of Total
Lodging	27,611	5.4%	160,453	31.2%	188,064	36.6%
Office	23,255	4.5%	85,092	16.6%	108,347	21.1%
Other	20,679	4.0%	125,452	24.4%	146,131	28.4%
Restaurant	8,862	1.7%	30,820	6.0%	39,682	7.7%
Retail	12,248	2.4%	19,519	3.8%	31,767	6.2%
Total	92,655	18.0%	421,336	82.0%	513,991	100.0%

H2.4 DATA INTEGRATION AND LIGHTING SCHEDULE DEVELOPMENT

The evaluation of hours of operation is based on a nested sample design in which each of the previously discussed data sources is used to adjust and validate those that precede it. The core of the analysis is the lighting logger sample, which provides the most accurate assessment of actual lighting schedules. Next come the data collected during the site visits when the loggers were installed, which play an important role in the aggregation of the logger data as well as provide secondary information on lighting schedules. The schedules derived from the loggers are then compared to data from the telephone survey of the logger sites, which allows for an immediate comparison – at the individual site level – of actual versus stated hours. Next, the broader telephone survey of program participants was used to leverage the results from the survey of the logger sites. Finally, program-tracking data were used to weight the sample results to reflect the overall population. Exhibit H2-8 provides a graphical illustration of the nested data sources. A detailed description of these steps follows.

Exhibit H2-8
Nested Data Sources



Lighting loggers (represented by the innermost circle at the top in Exhibit H2-8) provide the most accurate data for assessing actual hours of operation. For a monitored fixture, a lighting logger registers the time and date the fixture is turned on or off. Multiple loggers – up to seven – were installed at each site in the areas where CFLs were installed, covering each "schedule group" (a group of similar fixtures that operate together). The loggers remained in place for more than two months to collect data. Upon removal, the data from the loggers were processed to produce an hourly on-off profile for each logger.

Data from the on-site sample, represented by the second innermost circle, serve multiple purposes. First, they contribute site-specific details, secondary estimates of operating hours and operating factors, and other technical factors that are difficult to collect over the telephone. More importantly, they provide the data on verified bulb counts necessary to produce a weighted average schedule for each site. During installation, each logger was assigned to a schedule group and the number of CFLs in each schedule group was recorded. These CFL counts were used to develop weights to be applied in the aggregation of individual loggers into an overall site schedule. Exhibit H2-9 presents an example of how the CFL counts were applied to as weights. In the example, there are two schedule groups and a total of five loggers. The count of CFLs in each schedule group was divided evenly among its loggers. These counts were then divided by the total CFL count to create the weights.

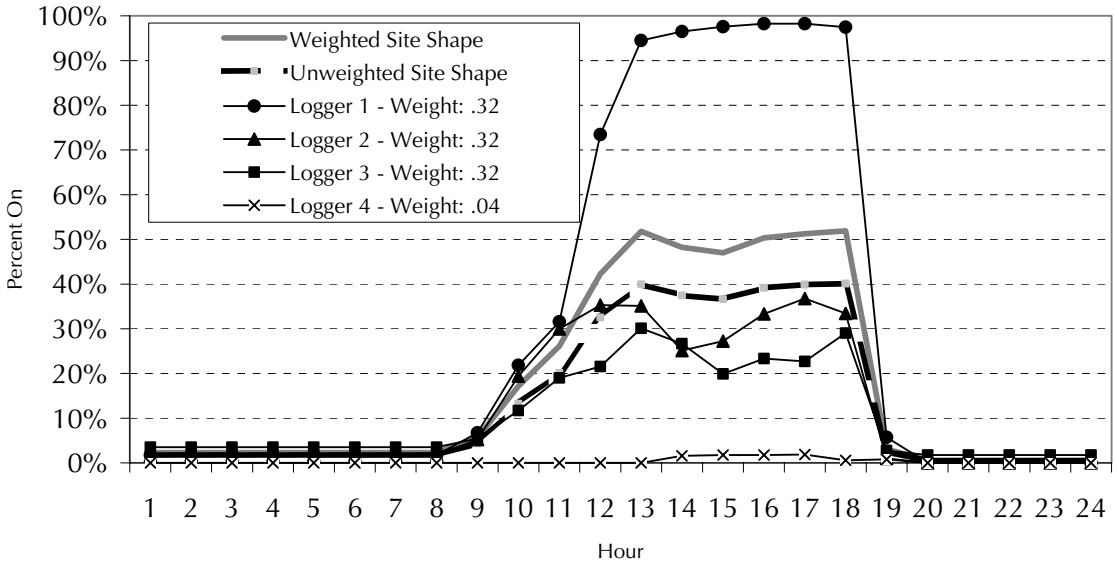
Exhibit H2-9
Logger Weight Calculation Example

Loggers	Schedule Group	CFLs
3	1	120
2	2	60

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

This step is particularly important to deal with cases where there have been a small number of bulbs installed in areas of a site that are not representative of the principal use for CFLs in the facility as a whole. For example, if there are 10 bulbs installed in a storage area of a site that has 100 total bulbs, the logger associated with that schedule group will be assigned a weight of 10%. These weights were used in aggregating the multiple loggers into average hourly operating schedules for each type of day (weekday, Saturday, and Sunday) and hour for each site. Exhibit H2-10 provides an example from an actual site of how this weighting affects the final shape for a site with four loggers by showing the individual logger shapes along with overall site averages with and without weights. Note the shape for Logger 4, which is barely perceptible at the bottom of the chart. The schedule group for this logger represents only 4% of the total bulbs. Without applying weights during aggregation, the average schedule is around 10 percentage points below what it should be.

Exhibit H2-10
Weighted Versus Non-Weighted Site Schedule Example



The telephone survey data – gathered for both the logger sites and a broader participant sample, henceforth referred to as the 'logger site' and 'participant' surveys, respectively – provide the stated hours of operation for different premises. These data were used to create hourly arrays for the three types of days that reflect when a given premise is open. Unlike the logger data, which reflect a percentage of time that the lights are on, the stated schedules are a binary value to reflect an on or off state, with the assumption that 100% of the lights are on during a premise's business hours. The comparison of these stated schedules with the observed schedules from the loggers becomes the basis for operating factors (OF), or the probability that a light is on during a given time period.

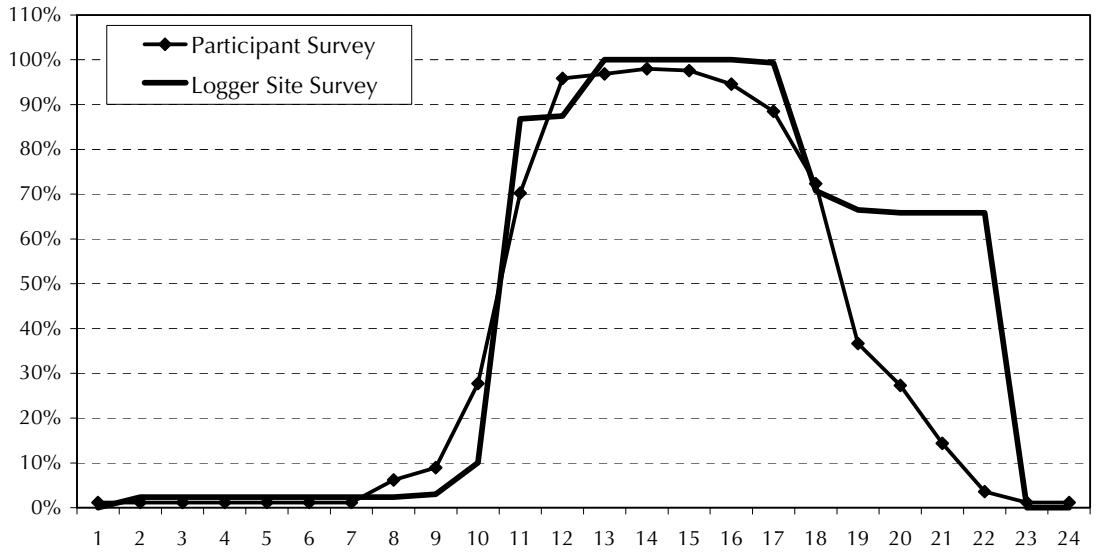
With its larger sample size, the participant survey provides a much better representation of the population than the smaller logger site survey. To leverage this characteristic, a comparison of the schedules from the two samples was used to calibrate the schedules associated with the logger data. This step is necessary because there is a correspondence between the stated schedules and observed schedules from the loggers; in general, where the stated schedules show few hours of operation, so do the loggers. In the event that the stated schedules from the participant sample showed more or fewer hours of operation in comparison to the logger sites, the ratio between the two was used to adjust up or down logger-based operating schedules so that the final comparison between observed and stated schedules did not introduce any sample bias into the analysis.

For each segment, the adjusted logger schedules are calculated by multiplying the logger-based schedule (as a percent of time on) for a given hour by the ratio of the overall average participant survey schedule to the overall average logger site survey schedule. The formula for this adjustment is:

$$LoggerAdjusted_t = Logger_t\left(\frac{\overline{Participant}}{\overline{LoggerSite}}\right)$$

An example of the need for this adjustment is shown in Exhibit H2-11, which presents the average operating schedules for the small retail segment based on the participant survey and the logger site survey. In the logger site survey, one or more of the sites contributed to significantly higher hours of operation after the typical closing time of five or six o'clock, as shown by the schedule for the participant survey. Based on a ratio of the two schedules, the logger-based schedules for this segment would be adjusted downward slightly to reduce any bias associated with the longer hours of operation associated with the smaller sample.

Exhibit H2-11
Survey Schedule Comparison for Small Retail
Business Hours of Operation
-- Percent Open --



After making the survey-based adjustments, the result is ten segment-specific operating schedules based on the participant survey (stated schedules) and logger data (observed schedules).[1] The final step is to use the data from the program tracking (represented by the outermost circle in Exhibit H2-8) to aggregate the two types of schedules for the ten segments down to a set of stated and observed schedules for the three types of days. The program tracking data represent the actual bulb counts in each segment and were presented in Exhibit H2-7 and applying them as weights in the aggregation of the individual segments ensures that the final schedules represent the actual mix of the segments present in the participant population. These results are presented in Section H3.

[1] It is important to note that this survey based adjustment has only a 7% effect (increase) on the overall program-wide annual hours of operation estimate.

H2.5 EFFECTIVE USEFUL LIFE

A secondary objective of this study was to develop an estimate of the effective useful life for *integral* CFLs installed under the Express Efficiency Program. As part of the 60 on-sites conducted, the make and model of the CFLs installed was gathered. The data gathered allowed us to determine the manufacturer's rated lifetime for 71 unique site-CFL model combinations (some sites had more than one type of CFL installed). This corresponded to the installation of 8,538 integral CFLs. The effective useful life (EUL) was estimated by dividing the average manufacturer's rated life by the estimated annual hours of operation.

H3. RESULTS

This section presents the results for the assessment of annual hours of operation for compact fluorescent bulbs (CFLs) installed as part of the 2003 Express Efficiency program, and an estimate of the CFL's effective useful life (EUL) based on these annual hours of operation. Although the final, program-wide estimate of annual hours of operation is the principal figure of interest, the methodology involved numerous intermediate steps that required detailed analysis of the individual segments. Many of these steps are of heuristic value in understanding the final estimates and clearly merit discussion in this section. However, any presentation and discussion of results for the individual segments must be prefaced by a very strong caveat: The purpose of this study, the sample sizes, and overall methodology were all intended to produce a single estimate of hours of operation for program participants; in no way does the presentation of segment-level results signify an endorsement for the use any other estimate than the final, program-wide figure.

It is also important to note that the final operating schedules presented in this report were developed to represent the typical CFL installed under the 2003 Express Efficiency program. As shown in Section H2, over a third of all CFLs rebated through the Express Efficiency program in 2003 were installed in the lodging business segment, primarily in guest rooms (which has been a similar trend for the past 4 years). Because we expect that the results of this study may be used for program planning outside of Express Efficiency, we have also developed an estimated operating schedule for all CFLs installed outside of the lodging segment. Because the lodging segment has significantly lower operating hours than the other segments, a program that does not target the lodging segment in a way that the Express Efficiency program has, would significantly underestimate its energy savings accomplishments.

The logger-based – or "observed" – operating schedules for CFLs installed as part of the 2003 Express Efficiency Program evaluation showed a total of 2,709 annual hours[2]. This value represents 67.6% of the 4,018 hours per year associated with the stated operating schedules derived from the participant survey. Both numbers are based on the aggregation of operating schedules for three types of days (weekday, Saturday, and Sunday) developed for the ten individual segments. Exhibit H3-1 shows the distribution of total hours by day type for both stated and observed operation schedules. Exhibit H3-2 presents the average number of weekdays (Monday through Friday) open for the participant survey respondents. These averages were factored into the weekday operating hours for those segments that were not open all five days.

[2] It is interesting to note that an evaluation was recently conducted by RLW Analystics on NSTAR's 2000-01 Small Commercial and Industrial Retrofit Program (which targets customers with demand less than 100 kW), that analyzed operating hours for lighting measures based on a sample of 60 loggered sites. This evaluation found operating hours to be 2,850 hours per year. Although this analysis was based on both CFLs and T-8s, it helps validate this study's findings. Source: Tomah Ledyard, RLW Analytics and Susan Haselhorst, NSTAR, "Evaluating the Underserved Small C&I Market: building a Bridge to Implementation," 2003 Energy Program Evaluation Conference, Seattle.

Exhibit H3-1
Observed and Stated Annual and Daily Average Hours by Type of Day[3]
For CFLs Installed Through the 2003 Express Efficiency Program

Day Type	Stated Schedules		Observed Schedules	
	Total	Daily Average	Total	Daily Average
Weekday	2,835	11.0	1,941	7.6
Saturday	567	10.9	373	7.2
Sunday	617	11.0	396	7.1
Total	4,018	11.0	2,709	7.4

Exhibit H3-2
Average Weekdays Open by Segment
For Businesses that Installed CFLs Through the 2003 Express Efficiency Program

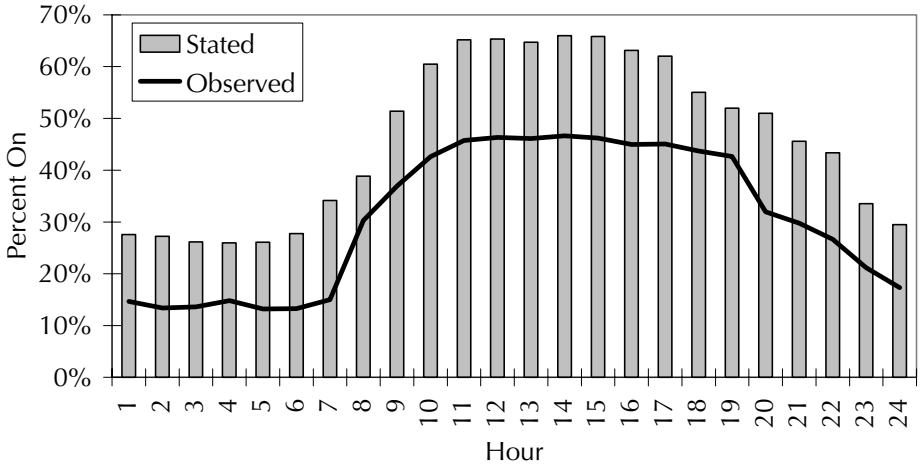
Business Type	<20 kW	>20 kW
Lodging	5.0	5.0
Office	4.5	5.0
Other	4.9	5.0
Restaurant	5.0	5.0
Retail	4.7	4.6

Both schedules are represented again in Exhibit H3-3 in terms of a 24-hour daily profile, with the stated schedules represented by the bars and observed hours represented by the solid line. The y-axis in the graph represents the weighted average percentage of CFLs on in a given hour throughout the year. For example, in the hour ending at 10:00 A.M., approximately 40% of CFLs were actually on while survey respondents stated that nearly 60% of their sites were open at

[3] Observed refers to logger data results, and stated refers to customer self reported responses during the on-site visit.

that time.[4] Nevertheless, these numbers are presented to show the general shape associated with the two schedules and it is interesting to note that the two schedules differ primarily in magnitude and not overall shape.

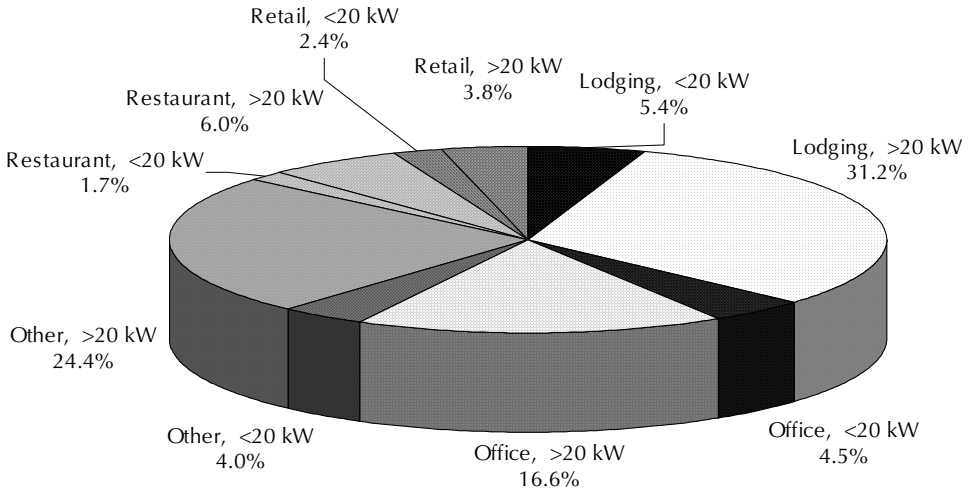
Exhibit H3-3
Average Daily Stated and Operating Schedules
For CFLs Installed Through the 2003 Express Efficiency Program



Weights for the aggregation of schedules were based on actual CFL installations associated with the ten individual segments. Although these numbers were presented in Section H2, because they play such an important role in the aggregation to the final figure they need to be revisited here. Exhibit H3-4 presents these weights as a percentage of total program CFL installations. As the chart shows, CFL installations were unevenly distributed among the segments. As one would expect, the small segments all had a smaller percentage than their counterparts among the large. Only the large retail segment had fewer bulbs (4%) than some of the smaller segments. More importantly, three of the large segments (lodging, office, and other) accounted for nearly three-quarters of total program installations.

[4] It is important to note when interpreting this chart that the actual lodging schedules are treated as stated schedules and averaged in with the other segments. Because the lodging schedules are based on guest room installations, the "percent on" tends to be relatively low. This coupled with the fact that lodging comprises about a third of all installation explains why the percent on is substantially below 100% during peak daytime hours.

Exhibit H3-4
Percentage of Program CFL Installations by Study Segment
For the 2003 Express Efficiency Program



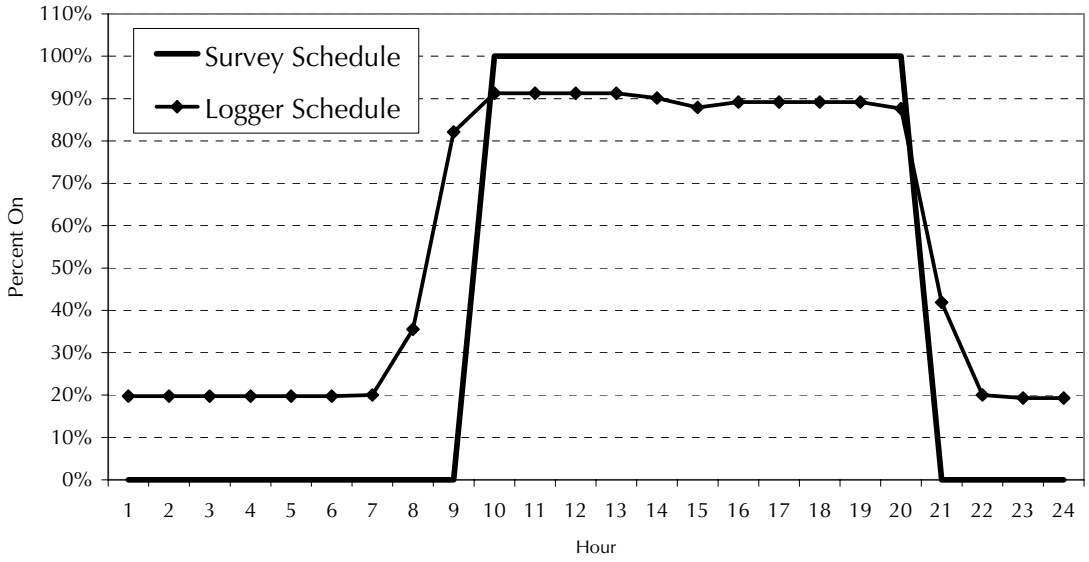
Although this report has repeatedly warned about using the results for individual segments, the disproportionate representation in Exhibit H3-4 will inevitably provoke curiosity about how the individual segment results influenced the final numbers. Exhibit H3-5 presents the average annual stated and observed hours of operation for the ten segments. Overall, the individual results are reasonable characterizations of their respective segments, with annual hours within expected ranges. For the logger-based schedules, members of the large segments tend to have more hours of operation than the small segments, a likely product of longer weekday business hours, being open more often on the weekends, and the structural characteristics of the premises that require more lighting. With the restaurant segments, for example, though both small and large boast similar stated schedules, the small segment had far fewer observed hours. This is possibly due to sites that don't require lighting during daytime hours, so the CFLs are manually turned off during those times.

Exhibit H3-5
Stated and Observed Daily Average Hours by Type of Day
For CFLs Installed Through the 2003 Express Efficiency Program

Business Type	Stated		Observed	
	<20 kW	>20 kW	<20 kW	>20 kW
Lodging	1,113	1,151	1,113	1,151
Office	3,529	7,144	2,492	2,739
Other	5,969	5,924	4,174	4,343
Restaurant	5,004	4,796	2,067	3,840
Retail	3,100	3,241	3,202	4,051

The greatest correspondence between stated and observed schedules was found in the retail sector, so much so that the logger-based schedules actually exceeded the stated schedules. For most of the retail sites, the logger data showed 100% of the lights going on at or slightly before the stated schedule of operation and going off at or somewhat later than the closing time. Enough sites had lighting during non-business hours that the final schedule based on the logger data went beyond the stated hours of operation. Exhibit H3-6 presents an example of one retail site from the sample. Although the average logger-based schedule only reaches 90% during business hours, the presence of substantial lighting during non-business hours raises the overall average beyond that of the stated hours of operation.

Exhibit H3-6
Stated and Observed Schedules for Example Retail Site



Note that for the lodging segments, stated and observed schedules were treated as equivalent to each other. Whereas the principal use for CFLs in these segments was in guest rooms, nearly all respondents to the participant survey claimed 24-hour schedules, likely in reference to their front desk operations. The typical usage of CFLs in a guest room is too dissimilar to compare it to the schedules associated with lobbies and front desks, so to prevent any distortion in the overall relationship between stated and observed schedules, the two were set equal to each other.

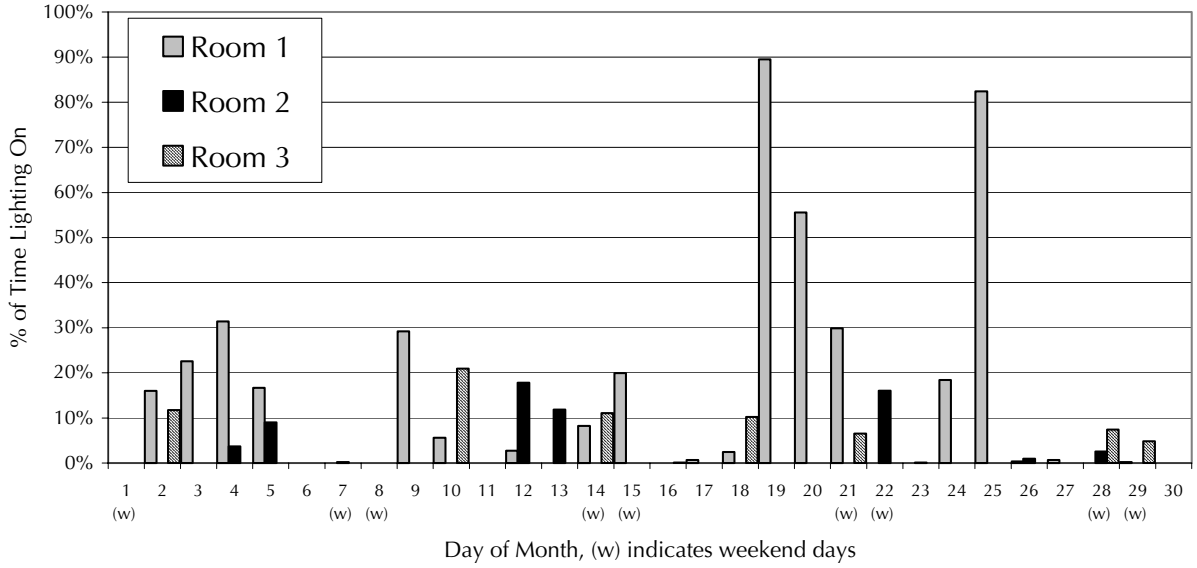
The lodging segments presented other challenges as well. Initially, the method for developing the operating schedules was identical for the individual segments. The figures above for both small and large lodging, however, are the result of a special treatment that was developed after the original schedules based on the logger data showed CFLs that were on an average of around 11% and 9% of the time, respectively. These translate roughly into 970 and 805 hours annually for small and large, with more than 85% of lodging CFLs associated with the latter. Because these two segments represent more than a third of total program CFL installations, the ramifications for the final figures called for more scrutiny.

Analyses on two fronts addressed the issue with the low figures for lodging. First, data from the site visits were scrutinized to examine the locations of both logger and CFL installations. Second, a more detailed analysis of the logger data examined patterns in the usage by date that might reveal why the overall usage was so low. With respect to the site visit data, more than 95% of CFL installations associated with lodging are in various applications within the guest room (bathrooms, bedside lamps, etc.). Because limited access to guest rooms made it difficult to install loggers in more than a few rooms at each site, the final schedules represented only a small percentage of the actual rooms at a site. In the event that a room went unoccupied for an extended period of time, the resulting average use would be abnormally low.

To verify that the low usage in the lodging segment was associated with room occupancy and not actual usage patterns, an analysis of the logger data sought to characterize occupancy on a daily basis. The average percentage of CFLs turned on was calculated for every day for the different rooms at the lodging sites. Based on the assumption that an average percent on of less than one percent for the day indicated an unoccupied room, days were classified as occupied or empty. Even with this conservative assumption (any light on for a total of 14 minutes, or 1%, during the day would signify an occupied room) the occupancy rates were around 50% and 40% for small and large customers, respectively.

To illustrate the issue with occupancy rates, Exhibit H3-7 shows one month of logger data for three different hotel rooms. As the chart clearly shows, none of the rooms has the lighting on every day – even if you include a miniscule amount of usage. In fact, all three rooms are likely unoccupied more than half of the days, so the original lighting hours did not represent typical usage, but rather typical usage mixed with zero usage.

Exhibit H3-7
Lodging Daily Lighting Pattern Example



As a remedy for the low occupancy, a separate analysis excluded all days that had an average use below 1% to develop alternative schedules for lighting. These schedules, which were assumed to represent the lighting operation based on full occupancy, were then reduced based on a 65% occupancy rate.[5] The hours associated with this alternative approach went into the aggregation to the final program-wide estimate. Note that even with this adjustment, however, the hours associated with lodging are still the lowest of all the segments.[6] Furthermore, the large proportion of program bulbs associated with lodging – large, in particular – means that these low numbers weigh heavily in the final estimate of hours of operation.[7]

The program tracking data clearly show that the large number of CFLs in the lodging segments is representative of one of the far more common applications of CFLs in the Express Efficiency Program. Consequently, the hours of operation associated with these segments clearly need to be accurately factored into the overall estimate. However, because there were certain obstacles, primarily the inaccessibility of guest rooms for a sufficient logger sample, Exhibit H3-8 presents alternative schedules based on an aggregation that excludes the lodging segments, which results in a 33% increase in overall annual operating hours to 3,612.

Exhibit H3-8
Observed and Stated Annual and Daily Average Hours by Type of Day
For CFLs Installed Through the 2003 Express Efficiency Program
-- Excluding Lodging --

Day Type	Stated Schedules		Observed Schedules	
	Total	Daily Average	Total	Daily Average
Weekday	4,011	15.8	2,601	10.1
Saturday	798	15.3	491	9.4
Sunday	868	15.5	519	9.3
Total	5,676	15.7	3,612	9.9

[5] PFK Consulting, a hospitality industry research firm, tracks national and regional hotel occupancy rates and trends. Occupancy rates in California, and regions within California where the Express Efficiency Program is most active, typically have occupancy rates between 60% and 70%.

[6] It is also important to note that this adjustment to the lodging segment only has a 4% effect on the overall program-wide annual hours of operation estimate.

[7] It is interesting to note that the Lighting Research Group at LBNL conducted a study titled "Lighting Energy Savings Opportunities in Hotel Guestrooms" in October 1999 that found very similar results. The LBNL study was based on lighting loggers placed on all fixtures in 10 rooms in a single hotel in Redondo Beach, California, over a three-month period. Assuming a distribution of fixture types (e.g., bedside, desk, overhead, bathroom, etc.) similar to that found installed in the Express Efficiency Program, and similar occupancy rates, the annual operating hours based on the LBNL study would be within 10% of those developed here, shown in Exhibit H3-5.

Effective Useful Life

A secondary objective of this study was to develop an estimate of the effective useful life for *integral* CFLs installed under the Express Efficiency Program. As discussed in Section H2, data collected during the on-sites allowed us to determine the manufacturer's rated lifetime for 71 unique site-CFL model, which corresponded to the installation of 8,538 integral CFLs. The average manufacturer's rated life among these integral CFLs was 7,962 hours.[8] Based on the 2,709 annual hours of operation presented above in Exhibit H3-1, this would equate to an estimated effective useful life of nearly 3 years for integral CFLs, based on the manufacturer's rated lifetime. Although the Express Efficiency program rebates both integral and modular CFLs, the integral CFLs comprise the large majority of CFLs installed, approximately 95%.

It is extremely important to note that because the EUL is a function of the annual operating hours, the EUL presented here should not be used in conjunction with different annual operating hour assumptions. If these results are to be used with a different annual operating hour assumption, the EUL should be set equal to 7,962 hours divided by the annual operating hours. Also note that this is a value for integral CFLs. If modular CFLs are also combined into the EUL assumptions, then a weighted average should be used. Currently, the Energy Policy Manual assumes an 8-year measure life for modular CFLs, or approximately 32,000 hours.

Confidence Intervals

Exhibit H3-9 presents 90% confidence intervals for various estimates of annual hours of operation. Of principal concern are the confidence intervals for the two overall estimates – with and without Lodging. These intervals signify a 90% certainty that the average annual hours of operation including Lodging lies between 2,244 and 3,174 hours for a relative precision of 17%. Excluding lodging, the figure lies between 3,086 and 4,138 hours. These figures are based on a sample size that meets minimum requirements for robustness. For the estimates of individual segments, the number of sites renders the confidence intervals meaningless. For example, the Small Other segment has a relative precision in excess of 100% and lower and upper bounds that defy logic. Recall, however, that this study was not intended to provide results at this level. The results presented in Exhibit H3-9 tend to support that general caveat.

[8] It is interesting to note that the current average rated lifetime for ENERGY STAR qualified CFLs is 8,000 hours. Source: ENERGY STAR website: http://estar6.energystar.gov/index.cfm?c=cfls.pr_crit_cfls.

Exhibit H3-9
90% Confidence Intervals For Annual Hours of Operation
For CFLs Installed Through the 2003 Express Efficiency Program

Business Type	Size	Sites	Average Annual Hours	Lower 90% CI	Upper 90% CI	Relative Precision
All	All	60	2,709	2,244	3,174	17%
All Except Lodging		51	3,612	3,086	4,138	15%
Lodging	<20 kW	5	1,113	628	1,597	44%
	>20 kW	4	1,151	849	1,452	26%
Office	<20 kW	6	2,492	1,004	3,981	60%
	>20 kW	9	2,739	1,556	3,922	43%
Other	<20 kW	3	4,174	-2,623	10,972	163%
	>20 kW	4	4,343	961	7,724	78%
Restaurant	<20 kW	5	2,067	468	3,666	77%
	>20 kW	10	3,840	3,213	4,468	16%
Retail	<20 kW	7	3,202	2,416	3,989	25%
	>20 kW	7	4,051	3,662	4,440	10%

Lighting Load Shapes

Finally, hourly load shapes associated with the different estimates are presented in Exhibit H3-10. The hour value represents the "hour ending" for an interval. That is, 12 represents the period from 11:00 am to 12:00 pm. The values in these shapes represent the percentage of time that CFLs were on for a given hour throughout the year. For example, in the Small Office segment at hour 14 (1:00 pm to 2:00 pm), lights were on 58.5% of the time. Multiply this by 365 for the annual value of 214 hours.

Exhibit H3-10
Load Shapes
For CFLs Installed Through the 2003 Express Efficiency Program

Hour	Overall	Overall Excluding Lodging	Lodging - <20 kW	Lodging - >20 kW	Office - <20 kW	Office - >20 kW	Other - <20 kW	Other - >20 kW	Restaurant - <20 kW	Restaurant - >20 kW	Retail - <20 kW	Retail - >20 kW
1	14.65%	19.19%	15.51%	5.30%	9.18%	23.60%	38.04%	23.54%	0.28%	2.32%	3.39%	8.96%
2	13.40%	17.31%	13.58%	5.42%	9.18%	22.35%	38.05%	19.98%	0.00%	0.62%	3.10%	8.96%
3	13.60%	17.52%	13.19%	5.73%	9.18%	21.36%	38.05%	21.19%	0.00%	0.56%	3.09%	8.96%
4	14.81%	19.73%	11.89%	5.34%	9.18%	21.40%	38.05%	26.91%	0.00%	0.56%	3.06%	8.96%
5	13.22%	17.03%	11.38%	5.81%	9.18%	21.15%	38.05%	19.19%	0.00%	4.27%	2.70%	8.96%
6	13.27%	16.14%	12.02%	7.69%	9.48%	23.48%	38.05%	14.35%	0.00%	7.80%	2.71%	9.04%
7	14.98%	17.41%	12.29%	10.54%	10.36%	27.34%	38.05%	12.97%	0.00%	13.69%	2.68%	11.82%
8	30.29%	37.87%	7.72%	18.82%	20.30%	35.65%	38.05%	54.81%	0.00%	22.79%	3.69%	21.43%
9	36.90%	45.89%	7.47%	23.76%	42.73%	33.75%	39.50%	64.14%	0.27%	42.92%	9.91%	39.52%
10	42.58%	54.29%	8.59%	24.71%	56.43%	38.60%	54.41%	68.69%	0.33%	60.55%	44.80%	47.52%
11	45.71%	61.17%	7.52%	20.93%	60.91%	38.58%	58.83%	73.65%	7.21%	74.12%	69.91%	80.29%
12	46.31%	65.30%	4.75%	14.94%	60.05%	39.00%	64.40%	77.40%	27.10%	86.33%	73.18%	88.14%
13	46.10%	66.27%	3.18%	12.55%	59.29%	40.96%	67.64%	78.87%	28.25%	82.74%	73.39%	89.00%
14	46.61%	64.75%	3.22%	17.27%	58.46%	36.58%	66.33%	78.49%	25.09%	82.85%	73.54%	88.69%
15	46.20%	63.75%	3.94%	17.84%	55.94%	34.93%	66.25%	79.57%	20.65%	76.59%	73.11%	87.54%
16	44.96%	63.15%	4.89%	14.93%	47.42%	34.51%	67.93%	79.87%	22.03%	74.64%	73.32%	88.15%
17	45.03%	63.28%	7.78%	14.42%	37.12%	35.66%	67.93%	79.87%	28.21%	79.39%	72.00%	87.96%
18	43.73%	63.31%	10.09%	9.81%	29.13%	34.33%	57.45%	83.50%	49.54%	78.92%	63.76%	87.54%
19	42.67%	59.68%	16.08%	12.72%	27.17%	37.29%	38.95%	76.98%	66.58%	73.00%	59.84%	82.25%
20	32.00%	41.00%	25.58%	14.87%	19.29%	34.30%	38.09%	35.07%	88.69%	65.53%	56.57%	66.69%
21	29.79%	35.95%	29.85%	17.31%	11.79%	30.57%	38.09%	33.79%	95.28%	51.11%	51.35%	38.99%
22	26.66%	31.47%	31.39%	16.11%	9.55%	29.76%	38.09%	30.33%	73.67%	40.28%	39.92%	26.69%
23	21.19%	25.78%	24.90%	11.24%	9.55%	28.79%	38.08%	28.89%	27.66%	21.48%	11.85%	13.41%
24	17.32%	22.23%	18.62%	7.14%	9.15%	26.61%	38.09%	27.15%	4.98%	9.14%	5.06%	9.35%