

**STATEWIDE STUDY OF PROGRAM
COST-EFFECTIVENESS:
TARGETING SMALL VERSUS MEDIUM/LARGE
NONRESIDENTIAL CUSTOMERS**

PHASE I

Study ID: PGE-001.01

April 21, 2004

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 Management Policy, Planning &
Support Section
Pacific Gas and Electric Company
San Francisco, California

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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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**STATEWIDE STUDY OF PROGRAM COST-EFFECTIVENESS:
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NONRESIDENTIAL CUSTOMERS**

PHASE I

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**STATEWIDE STUDY OF PROGRAM COST-EFFECTIVENESS: TARGETING SMALL VERSUS
MEDIUM/LARGE NONRESIDENTIAL CUSTOMERS
PHASE I**

EXECUTIVE SUMMARY

This executive summary highlights findings from the Phase I Statewide Study of Program Cost-Effectiveness: Targeting Small versus Medium/Large Nonresidential Customers, conducted by Quantum Consulting (QC) and Pacific Gas and Electric Company (PG&E) on behalf of the California Public Utilities Commission (CPUC). The primary objective of this study was to assess the cost to deliver energy efficiency programs targeted to small nonresidential customers, and the effects on program cost-effectiveness. The CPUC defines small customers, which comprise approximately 80% of all nonresidential electric accounts, as those with peak demand less than 100 kW. It is widely believed that small customers are more costly and difficult to reach than large or medium nonresidential customers, which have tended to dominate historic participation in California's energy efficiency programs. However, existing literature offers little cost data to support this assertion. To meet the study's objective, three distinct tasks were conducted: (1) conduct a detailed literature review to identify existing studies and data sources that could provide both insight and empirical data to assist in meeting the study's objective; (2) collect and analyze existing study results and empirical data on measure costs, or the costs vendors charge customers to purchase and install energy efficient equipment; and (3) collect and analyze empirical data on program costs (i.e., the costs involved with administering, marketing and implementing energy efficiency programs).

Program data analyzed in this study consistently revealed substantially higher costs associated with delivering energy efficiency programs to small nonresidential customers. The reported budgets from actual energy efficiency programs analyzed for this study consistently showed that it was more expensive to administer, market and implement a program targeted at smaller nonresidential customers. Furthermore, vendor survey data and actual customer invoices clearly showed an increase in measure cost (for equipment and labor) to install energy efficiency measures among smaller nonresidential customers. The study found that, based on empirical data, measure costs were generally 17% higher for small customers compared to large customers; and program costs were higher by a similar margin. Combined, the total costs to serve small nonresidential customers could be as much as 30-50% higher, depending on the program design.

This study was managed by Pacific Gas and Electric Company (PG&E), for the California Public Utilities Commission, with input from the California Measurement Advisory Council (CALMAC) and the Market Assessment and Evaluation Statewide Team of Research Organizations (MAESTRO). It was funded through California's public goods charge (PGC) for energy efficiency.

The report is available at www.calmac.org, Study ID: PGE-001.01.

1. INTRODUCTION

This is the final report prepared for the Phase I Statewide Study of Program Cost-Effectiveness: Targeting Small versus Medium/Large Nonresidential Customers, conducted by Quantum Consulting (QC) and Pacific Gas and Electric Company (PG&E) on behalf of the California Public Utilities Commission (CPUC). The primary objective of this study was to assess the cost to deliver energy efficiency programs targeted to small nonresidential customers, and the effects on cost-effectiveness. The CPUC defines small customers, which comprise approximately 80% of all nonresidential electric accounts, as those with peak demand less than 100 kW. There is a general consensus that small customers are more costly and difficult to reach than large or medium nonresidential customers, which have tended to dominate historic participation in California's energy efficiency programs. However, existing literature offers little cost data to support this assertion. The objective of this study was to assess the effects on cost-effectiveness by estimating the incremental cost of serving small customers primarily by mining existing data sources and interviewing program implementers that are delivering programs targeted to this hard-to-reach segment.

This study was managed by Pacific Gas and Electric Company (PG&E), for the California Public Utilities Commission, with input from the California Measurement Advisory Council (CALMAC) and the Market Assessment and Evaluation Statewide Team of Research Organizations (MAESTRO). It was funded through California's public goods charge (PGC) for energy efficiency.

The report is available at www.calmac.org, Study ID: PGE-001.01.

1.1 BACKGROUND

Since 1998, California's investor owned utilities (IOUs) have been offering informational, educational and financial assistance programs to encourage the adoption of energy efficiency measures. These programs have been funded through a public's good charge (PGC) collected as part of each customer's energy bill. Historically, participation in nonresidential energy efficiency programs has been dominated by medium and large sized customers, typically over 100 kW in peak demand. In 2000, the CPUC raised concerns over the equitable distribution of energy efficiency program funds (e.g., rebates paid) to all customer segments paying into the PGC that funded these programs. In 2000, the CPUC proposed a number of customer segments believed to be underserved by these programs, or hard-to-reach (HTR), which included small nonresidential customers.¹ More recently, the California IOUs have developed performance goals that target these HTR customers. For example, in 2002, the Statewide Express Efficiency program had a performance goal that resulted in over half of all applications being submitted by very small customers (defined as having peak demand less than 20 kW). These goals were

¹ CPUC decision D.00-07-017, July 6, 2000, ordering paragraph 66.

typically set to achieve participation rates in HTR segments that are 10% higher than historic rates.

Emphasizing participation among small nonresidential customers can have a significant effect on a program's effectiveness, both from the perspective of generating energy savings, and operating cost effectively. Clearly, the potential savings from a small customer is less than a large customer. But from a programmatic view, it is not necessarily proportionally less expensive to run a program targeted at small customers than larger customers. There are many fixed costs associated with running a program, such as program reporting activities, application and incentive processing, marketing, inspections, etc. For a program targeted at smaller customers to achieve the same level of savings as a program targeted at larger programs, there can be significantly more program administrative and marketing activities. In sum, it is more costly to run a program targeted at small customers.

A second issue is the costs customers must pay to have energy efficient measures installed. Contractors and energy services companies face similar issues as do programs, in that there are many fixed costs associated with marketing and serving smaller customers. It is believed that contractors and energy service companies often will charge small customers more on a per unit basis (e.g., average cost per T-8 fixture to be installed) to cover their fixed costs. Another way of viewing this is that contractors and energy service companies may offer volume discounts, which is difficult to obtain for an individual small customer. In sum, the measure costs (cost to purchase and have a measure installed) are generally higher for small customers.

Perhaps one of the most commonly used metrics by the CPUC and the California IOUs when determining if a program is cost-effective is the Total Resource Cost (TRC) test. Essentially the TRC is calculated as the ratio of the lifecycle benefit of all the energy savings, divided by all of the associated program and measure costs. Therefore, on a per unit of savings basis, if a program is more expensive to administer and the measure costs are higher, the program is less cost-effective.

The primary purpose this study was commissioned was to determine the extent to which program's targeted at small nonresidential customers are less cost-effective. More specifically, per unit of energy savings benefit, how much more are the measure costs and program costs for a program targeted at small nonresidential customers?

This study will present a significant amount of empirical data that are often presented in terms of dollars per lifecycle kW saved. The reason for presenting data in this format is that it allows for a direct comparison to a program's cost-effectiveness. The higher a program's cost is per lifecycle of demand (kW) savings, the lower its TRC ratio will be, and it will be viewed as being less cost-effective.

2. METHODOLOGY OVERVIEW

To meet the study objective, three primary phases of analysis were conducted. The first phase involved a detailed literature review that identified existing studies and data sources that provided both insight and empirical data on the cost to serve small customers. The second phase focused on collecting and analyzing empirical data on measure costs, or the costs that vendors charge customers to purchase and install energy efficient equipment. The third phase focused on collecting and analyzing empirical data on program costs (the costs involved with administering, marketing and implementing energy efficiency programs) and lifecycle demand savings.

2.1 LITERATURE REVIEW

The objective of the literature review was to identify any existing studies or data sources that could be utilized to help meet this study's objectives. Major conference proceedings, trade publications, and industry organizations were assessed to identify studies that have been conducted on the small commercial segment or studies focused on assessing measure or energy efficiency program costs and savings. Secondly, a review of existing data sources was conducted to identify any databases or reports that could be used to assess measure costs, and program costs and savings. This review included energy efficiency program filings submitted to the California Public Utilities Commission (CPUC) by the California Investor Owned Utilities (IOUs) and independent third party administrators. Furthermore, existing data on measure costs were analyzed that are maintained by the California Energy Commission (CEC) and the California IOUs.

Although the literature review was not successful in identifying any existing studies that analyzed measure and program costs, the literature review did identify a number of rich data sources on measure and program costs.

2.2 MEASURE AND PROGRAM COST ANALYSIS

The objective of the latter two phases of the study was to assess the incremental measure and program costs associated with serving small nonresidential customers. As our overall objective is assessing the effects on cost-effectiveness, program costs and measure costs were expressed in terms of a dollar cost per lifecycle kW saved. As discussed above, the lower the cost per lifecycle kW, the more cost-effective a program is considered to be. By integrating the findings from these latter two phases (measure costs, program costs, and program savings), and comparing results for programs targeted at different customer segments (e.g., large versus small nonresidential customers), it is possible to estimate the effects on a program's cost-effectiveness due to targeting small nonresidential customers.

As a result of the literature review a number of data sources were identified that could provide empirical data on both measure and program related costs to allow for this analysis to be conducted. Empirical measure cost data were utilized to directly compare the costs of purchasing and installing energy efficiency measures between small and large nonresidential

customers. Also, program cost and savings data were utilized from a number of energy efficiency programs administered in California in 2002 in order to compare costs between programs that target large, medium and small nonresidential customers. Furthermore, measure and program savings data were utilized to normalize all cost data to a dollar per lifecycle kW saved. Developing measure and program costs estimates per lifecycle kW by customer segment (e.g., large versus small nonresidential customers), allowed us to assess the incremental effects on program cost-effectiveness due to serving small nonresidential customers.

3. LITERATURE REVIEW

The first objective of the literature review was to determine if any similar studies had been conducted that would quantifiably meet the objective of this study. As this was not the case, the next objective was to identify any relevant studies or existing data sources that might provide empirical data that could serve as input to meeting the study's objective.

As discussed, the literature review encompassed a broad range of sources, including major conference proceedings, trade publications, and industry organizations. In addition, energy efficiency program filings submitted to the CPUC by the California IOUs and independent third party administrators were reviewed. Finally, existing data on measure costs were analyzed that are maintained by the CEC and the California IOUs.

The key sources reviewed are summarized in Exhibit 1. This thorough literature review turned up many studies focused on the barriers to participation as well as vendor perceptions of this market, however few studies discussed costs associated with measure installation or program administration. Those that did mention costs typically made references to costs being higher, but provided no quantitative evidence. The following are a few examples of the types of statements found in the literature:

- The small commercial market segment is one of the most difficult segments from which to obtain DSM resources. It should be expected that the resources from this segment will cost more than resources from many other segments.²
- The transaction costs for an individual small business are often comparable to those of a large business, but the benefits are much smaller. Also, the costs of purchasing products and services during the project implementation phase is much higher because they do not have the same purchasing power as large businesses.³
- A second concern has to do with the ability of the competitive market to deliver cost-effective energy efficiency and renewable energy services to smaller customers. Again, experience has tended to show that large commercial and institutional customers represent more profitable targets for energy services companies.⁴
- The primary reasons the small business customer has little or no access to efficient energy systems are high transaction costs for providers of energy services to this market

² Kellogg L. Warner. 1994. "Delivering DSM to the Small Commercial Market: A Report from the Field on What Works and Why." ACEEE Summer Study.

³ Cyane Dandridge and Andrew Green. 1998. "Access and Delivery Strategies for Small Businesses: Buyers Clubs for Energy Efficiency," ACEEE Summer Study.

⁴ Larry Alexander, Rick Hornby, Steve Morgan and Val Jensen. 1998. "Feasibility of Small Customer Aggregation for the Delivery of Comprehensive Energy Services in a Competitive Utility Environment." ACEEE Summer Study.

... Providing energy-efficiency services to small nonresidential customers is a challenge for providers: Sales are difficult. Marketing costs are high. ... Reaching and serving these customers is costly.⁵

Exhibit 1 lists the sources that were reviewed, including sources consulted that yielded no relevant information on the small customer market. Appendix A lists the annotated bibliography for each item, providing a brief summary of the information contained in the source.

The chief qualitative findings, mainly drawn from studies based on customer and vendor interviews, are clear, although mostly founded on generalizations: (1) small customers are more costly and difficult to reach and (2) energy service providers avoid the small business market due to higher transaction cost and lower profit margins. Unfortunately, little data exist on the actual measure and program costs associated with serving this class of customers.

Fortunately, there are a number of data sources that provide very relevant measure and program cost and savings information. These data sources include California's Database for Energy Efficient Resources (DEER, maintained by the CEC), the California IOU's energy efficiency program tracking systems, and many of the 2002 CPUC energy efficiency program filings. However, no analysis to determine the cost to deliver energy efficiency programs to the small nonresidential population has previously been conducted to our knowledge, either based on these or any other relevant data sources.

These data sources provide the basis for all analysis conducted for this study.

⁵ Jon Wellinghoff, John L King III, Mark Bailey and Jerry Lawson (2000). "ESCOs, ESPs and Small Business: A Model for Efficiency." ACEEE Summer Study.

Exhibit 1
Key Literature Review Sources

REVIEW OF CONFERENCE PROCEEDINGS			
Conference Proceedings Reviewed	Year of Proceedings Reviewed	Number of Relevant Papers Identified	Citation for Relevant Papers
<i>American Council for an Energy-Efficient Economy (ACEEE) Summer Study</i>	1994	2	Warner; Tolkin and Ford Dandridge and Green; Alexander et al Lee; Wellinghoff et al
	1996	0	
	1998	2	
	2000	2	
<i>ACEEE, Third Annual Market Transformation Workshop</i>	1999	0	
<i>Association of Energy Service Professionals (AESP) Conference</i>	1997	0	Nore and Gillman Smith et al; Cooney; Lee et al Cavalli et al; Kinnear et al
	1998	1	
	1999	3	
	2000	0	
<i>International Energy Program Evaluation Conference (IEPEC)</i>	2001	2	
	1993	0	Mosenthal and Wickenden
	1995	0	
	1997	0	
	1999	1	
2001	0		
REVIEW OF ORGANIZATIONS' WEB SITE CONTENT			
Organization	Number of Relevant Papers Identified	Citation for Relevant Papers	
California Energy Commission	2	Rita Norton; Energy Commission #P400-99-007	
California Measurement Advisory Committee (CALMAC)	**	Barakat & Chamberlin; Xenergy & Quantum;	
Consortium for Energy Efficiency	1	"Guidelines for Energy Efficient Unitary HVAC Systems"	
E-Source	3	E-Source, ""E-mail and Permission Marketing to Small Business."; E-Source, "Best Practices in Energy Efficiency Programs for Small Businesses"; E-Source, "Serving Small Business Customers Profitably"	
Energy Ideas Clearinghouse	2	M. M. Abraham. 1995. "Energy Conservation Opportunities in Small Commercial Buildings"; IRT Environment, Results Center. 1993. "Green Mountain Power: Small Commercial and Industrial Retrofit"	
The Energy Journal	0		
Iowa Energy Center	0		
National Association of Regulatory Commissioners (NARUC)	0		
Northwest Energy Efficiency Alliance	0		
Northeast Energy Efficiency Partnership	0		
New York State Energy Research and Development Authority (NYSERDA)	0		
Regional Economic Research (RER)	1	RER. 2000. "SDG&E Small Business Sector Assessment"	
Google Web Searches	5	IMT with PECl ;ICF for PGE; CEE; Xenergy; HECO	
REVIEW OF EXISTING DATA SOURCES			
California Energy Commission		2001 Database for Energy Efficient Resources	
California Public Utility Commission (CPUC) Energy Efficiency Program Proposals	2002	Proposal and budget submittals for 29 nonresidential energy efficiency programs.	
PG&E, SCE, SCG, SDG&E		1994-2001 Energy Efficiency Program Tracking Systems	

**There are numerous studies on the CALMAC site dealing with small commercial that provide information on the barriers and figures on the size of the sector (and subsectors within that sector, e.g., how many renters) but none on the incremental cost to serve

4. MEASURE COST ANALYSIS

The objective of the measure cost analysis was to determine if there is a difference in the equipment costs and labor costs charged by vendors to install energy efficient equipment for small nonresidential customers. As discussed, the literature review identified two reliable data sources that provided detailed information on measure cost: the 2001 California DEER database, and the California IOU's energy efficiency program tracking systems (in particular PG&E's 1997 program tracking database).

The DEER database provides measure costs for hundreds of energy efficiency products, and is based on vendor data collected during surveys. In 1997⁶, PG&E's energy efficiency program tracking system collected measure cost data obtained from actual vendor invoices, which were required as part of the program application. PG&E's program tracking system documents project costs for approximately 10,000 measure installations.

Information about customer size was not always available in these two data sources, so job size (or volume) was used as a proxy to assess the incremental costs associated with serving small customers. It was our working assumption that job size and customer size would be highly correlated. It is expected that smaller customers will have smaller job sizes, and will cost more on a per measure basis due to the fixed costs associated with serving a customer (of any size). The DEER database presents measure costs for high and low volume for lighting measures. In general, the DEER reports that the whole-to-retail markup values for lighting products is 17% higher for low volume than high volume (page 2-8).

The program tracking data, on the other hand, provides the actual vendor costs for each measure for each project that was rebated through the program. To determine the average measure costs associated with low versus high volume, we binned projects by size for each measure type, and developed cut points where the average measure cost jumped. For most measures, the low volume bin generally comprised half to two-thirds of the projects (overall 60% of the 9,803 projects analyzed were considered to be low volume). Consistent with the DEER, the program tracking data indicated that the increased cost associated with serving small customers (or low volume projects) was 18% higher for key lighting measures.

Below we present the high and low volume measure costs found in the DEER and the program tracking databases for three key lighting measures:

- Screw-in compact fluorescent lamp (CFL) systems, modular 14-26 Watts No Reflector.
- Hard-wired CFL systems, modular 14-26 Watts.
- T-8 fluorescent, 4-Foot 32 Watt lamp, electronic ballast systems.

⁶ PG&E collected this data in other years, but not recently. 1997 was the most robust and recent year.

Our analysis focused on these three measures because they have proved to be the most popular measures installed in California rebate programs over the past few years. The largest energy efficiency program serving nonresidential customers is the Statewide Express Efficiency program. In 2002, these measures contributed over three-quarters of the total energy savings associated with this program.

As discussed above, because we are ultimately looking at the effects on cost-effectiveness, it is important to analyze these data on a measure cost per unit of energy savings basis (in this case the measure cost per lifecycle kW savings). Exhibit 2 presents the dollars per lifecycle kW for high and low volume projects, based on the DEER and participant tracking databases, for each of these three measures.

Exhibit 2
Measure Costs for Key Lighting Measures, High versus Low Volume Projects
Based on DEER and Participant Tracking Databases
Dollars per Lifecycle kW Saved

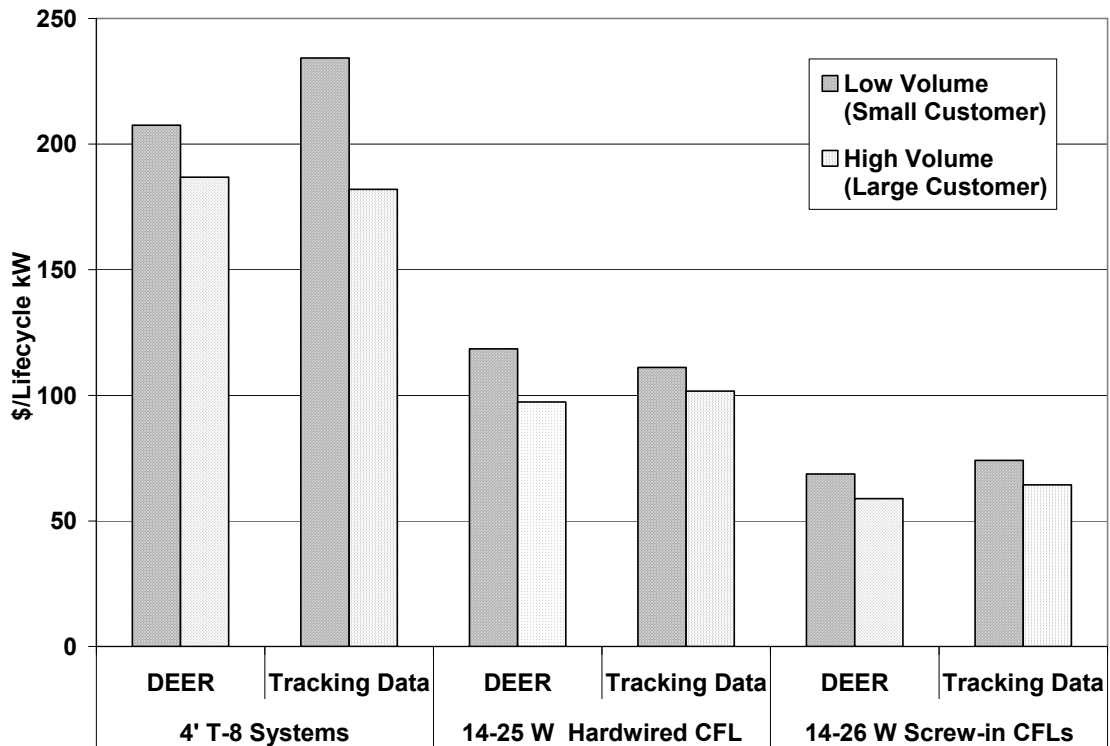
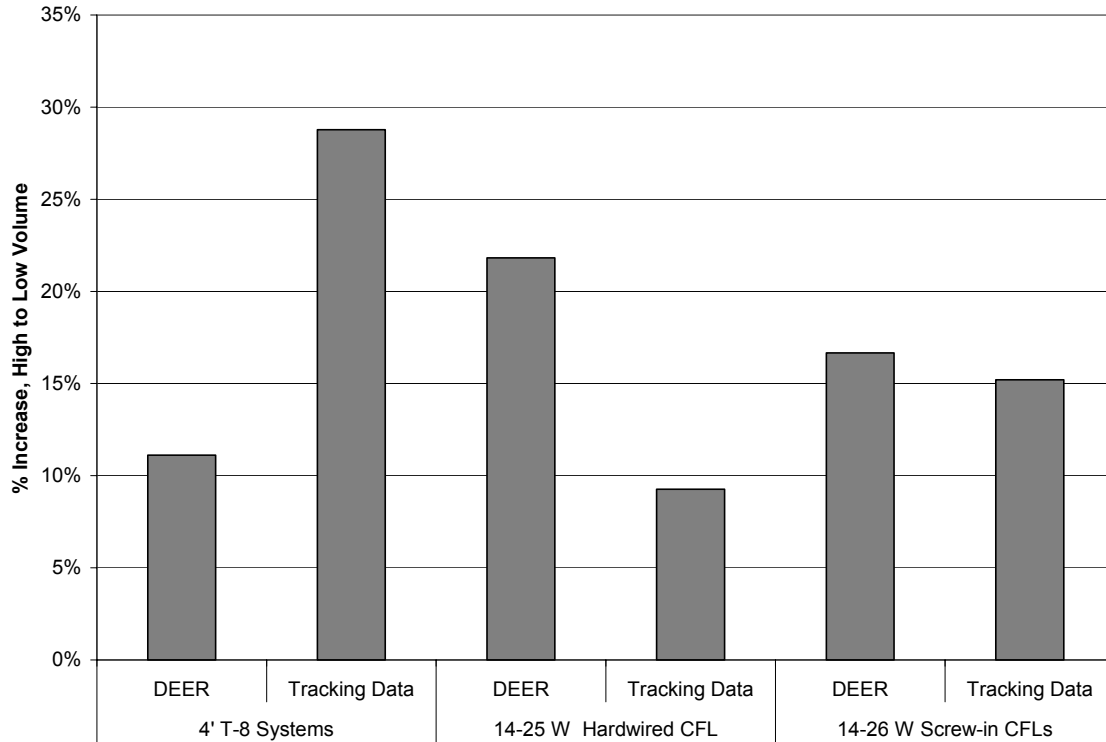


Exhibit 3 presents the percentage increase in measure cost for low volume projects versus high volume projects, based on the DEER and participant tracking databases, for each of these three measures.

Exhibit 3
Increase in Measure Costs for Low Volume vs. High Volume Projects
Based on DEER and Participant Tracking Databases



On average, across these three measures and two data sources, low volume projects exceeded high volume projects by 17%.

5. PROGRAM COST ANALYSIS

The objective of the program cost analysis was to determine if there is a difference in the costs to implementing energy efficiency programs targeted at small nonresidential customers. As discussed, the literature review identified a number of energy efficiency programs targeted to various nonresidential customer segments, that were funded by the CPUC in 2002. As part of the regulatory requirements, budgets for these programs were made publicly available that included estimated costs for administration, marketing, auditing, application processing, and incentive processing.⁷ Furthermore, expected lifecycle demand (kW) savings were also submitted, which would allow us to normalize these costs on a per unit energy savings basis, as discussed above.

Budgets and program filings for nine different energy efficiency programs were analyzed to assess the differences in programmatic costs associated with serving small nonresidential customers. These nine programs were all offered in 2002 and were implemented by both the California Investor Owned Utilities (IOUs) as well as independent third party administrators. Five of these programs were offered only to small nonresidential customers (generally with peak demand less than 100 kW) and only in targeted geographic areas. These programs were typically direct install type programs that offered incentives that averaged anywhere from 33% to 100% of the measure cost. These were primarily lighting programs, with lighting measures generally consisting of 80 to 100% of the programs' goals.

Two other programs were offered to both small and medium sized customers (peak demand less than 500 kW) and in much larger geographic areas (entire IOU service territories). These programs were typical rebate programs that offered incentives that averaged approximately 25% and 33% of the measure cost. These were also primarily lighting programs, with lighting measures consisting of around 80% of the programs' goals.

The final two programs were offered primarily to large customers (peak demand greater than 500 kW), also in much larger geographic areas (entire IOU service territories). These programs were typical standard performance contract programs that offered incentives that averaged approximately 50% and 70% of the measure cost. These programs targeted more customized types of measures, but included standard lighting measures.

These nine were selected as they provided a representative set of programs that were clearly targeted to various nonresidential segments of different sizes. This allowed us to more explicitly compare costs associated with implementing programs targeted to small, medium and large nonresidential customers. These programs were also selected based on their clear delineation of costs in their budgets for administration, marketing, auditing, application

⁷ Program budgets, implementation activities and cost-effectiveness estimates were submitted with the Program Implementation Plans to the CPUC as part of an integrated workbook, on May 24, 2002. The budget information used for this study was contained in Table PIP1.1: 2002-2003 Implementation Plan Program Budget of this workbook. Estimated lifecycle demand savings was contained in Table 3.1- Unit Based Implementation Activities.

processing, and incentive processing. Exhibit 4 below summarizes the key characteristics of these programs.

Exhibit 4
Characteristics of Programs Selected for Analysis
-- California Energy Efficiency Programs Offered in 2002 --

Program	Targeted Customer Size	Program Type	Average Incentive (% of Measure Cost)
1.	Small (<100 kW)	Direct Install	33%
2.	Small (<100 kW)	Direct Install	50%
3.	Small (<100 kW)	Direct Install	50%
4.	Small (<100 kW)	Direct Install	75%
5.	Small (<100 kW)	Direct Install	100%
6.	Small and Medium (<500 kW)	Perscriptive Rebate	25%
7.	Small and Medium (<500 kW)	Perscriptive Rebate	33%
8.	Large (>500 kW)	Standard Performance Contract	50%
9.	Large (>500 kW)	Standard Performance Contract	70%

For the remainder of this report, these nine CPUC energy efficiency programs offered in 2002, will be referred to as follows:

1. Small Direct Install Program, 33% Incentives
2. Small Direct Install Program, 50% Incentives
3. Small Direct Install Program, 50% Incentives (second to offer 50%)
4. Small Direct Install Program, 75% Incentives
5. Small Direct Install Program, 100% Incentives
6. Small/Medium Rebate Program, 25% Incentives
7. Small/Medium Rebate Program, 33% Incentives
8. Large Customized SPC Program, 50% Incentives
9. Large Customized SPC Program, 70% Incentives

The budgets and program filings for each of these programs were analyzed and the following cost and program data were estimated for each program:

- Administration Costs.
- Marketing and Outreach Costs.

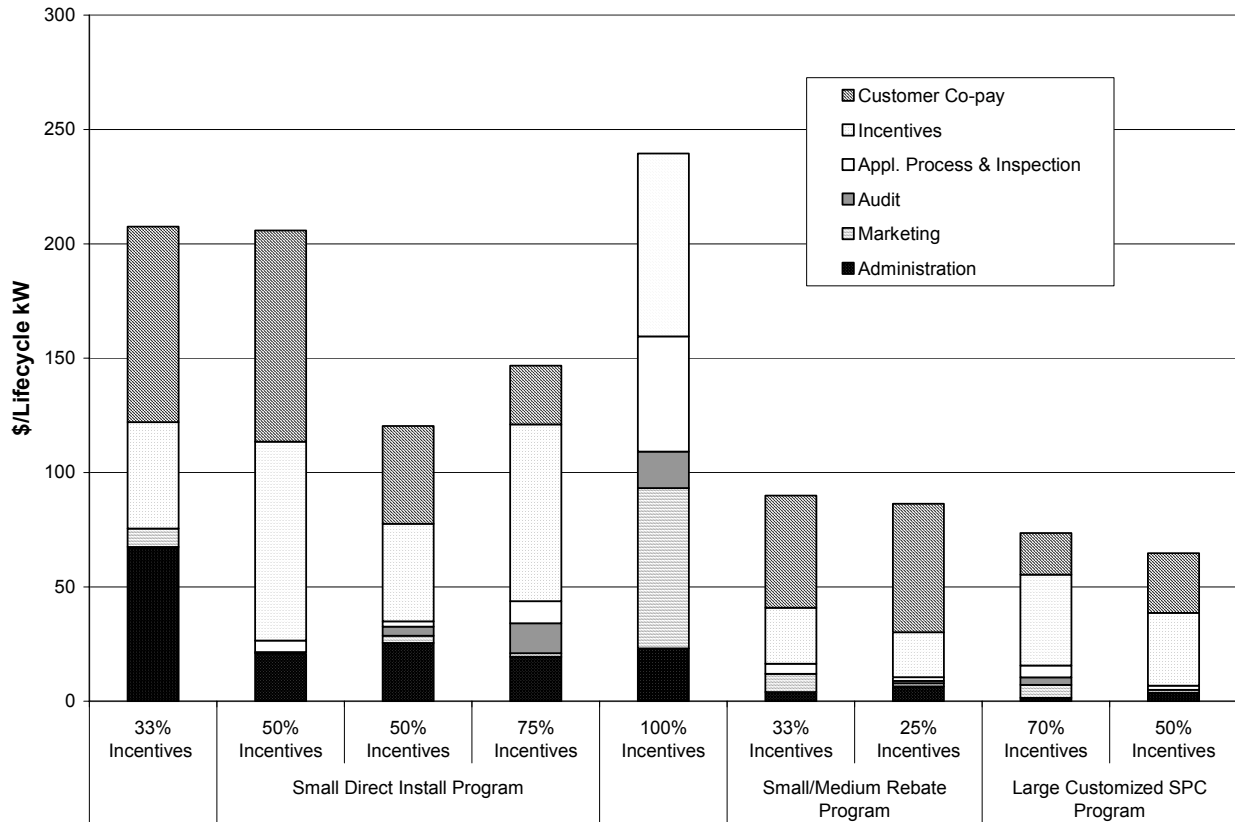
- Audit Costs for Identifying Potential Measures.
- Application Processing and Inspection Costs.
- Incentives Paid.
- Expected Participant Co-payment (measure costs minus incentives).
- Lifecycle demand (kW) savings for the program.

When assessing the costs to serve small customers across each of these nine programs, we normalized the costs by putting them in terms of dollars per lifecycle kW saved. As discussed earlier, this allowed us to compare the effects on a program's cost-effectiveness due to targeting specific customer segments.

Our analysis is focused on examining what we term the societal cost, which is defined as all costs incurred for implementing the program and installing the measure. This would include all of the costs paid for by the program (administration, marketing, auditing, application processing, inspections and incentives), plus the additional costs paid for by the participating customer outside the program (the participant's co-payment). Another way of viewing the societal cost is that it is the measure cost plus all program costs (except the incentive). We focus on the societal cost because the TRC cost-effectiveness ratio uses this cost as the denominator in the ratio.

Exhibit 5 presents the societal cost per lifecycle kW associated with each of these nine programs, with the total cost broken down into the individual components. To look at the program cost per lifecycle kW, simply remove the top bar associated with the customer co-payment (which is zero for the small direct install program paying 100% incentives).

Exhibit 5
Total Societal Cost per Lifecycle kW Saved for Nine Studied Programs
Including Breakout of Costs by Component

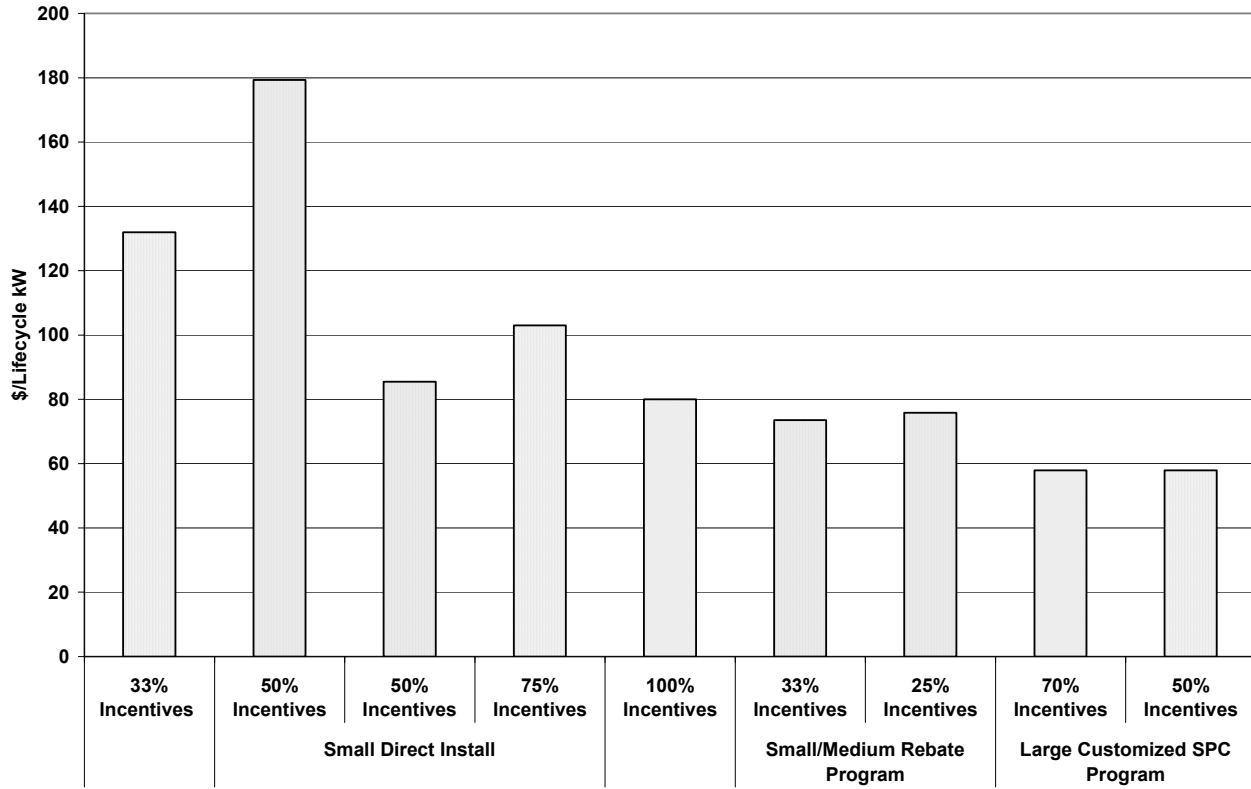


There are many factors to consider when comparing these costs. It is important to note that many of the differences across programs are due to different program assumptions and the underlying portfolio of measures emphasized in the program. For example, based on the measure cost data presented in Exhibit 2 above, a program that emphasizes screw-in CFLs will have a much lower dollar per lifecycle kW than a program that emphasizes T-8s. Furthermore, we found that assumptions of measure savings and measure costs also varied significantly from program to program. A program that assumes larger kW savings or lower measure costs will result in lower societal costs per lifecycle kW saved.

A good example of how dramatically program design assumptions and program mix can differ is through a comparison of the two small direct install programs offering 50% incentives. One program has a societal cost that is 71% higher and a program cost that is 46% higher. However, the “more expensive” program actually has administration, marketing, auditing, application processing and inspection costs that are one quarter *lower*. The reason the first program is so much more expensive is due to differences in the measure mix emphasized and assumptions about measure savings and measure costs (e.g., higher measure costs, lower demand savings, and a less cost-effective measure mix). Exhibit 6 below presents the average measure cost per

lifecycle kW saved for each program to illustrate how much the underlying measure mix and assumptions about cost and savings varied across programs.

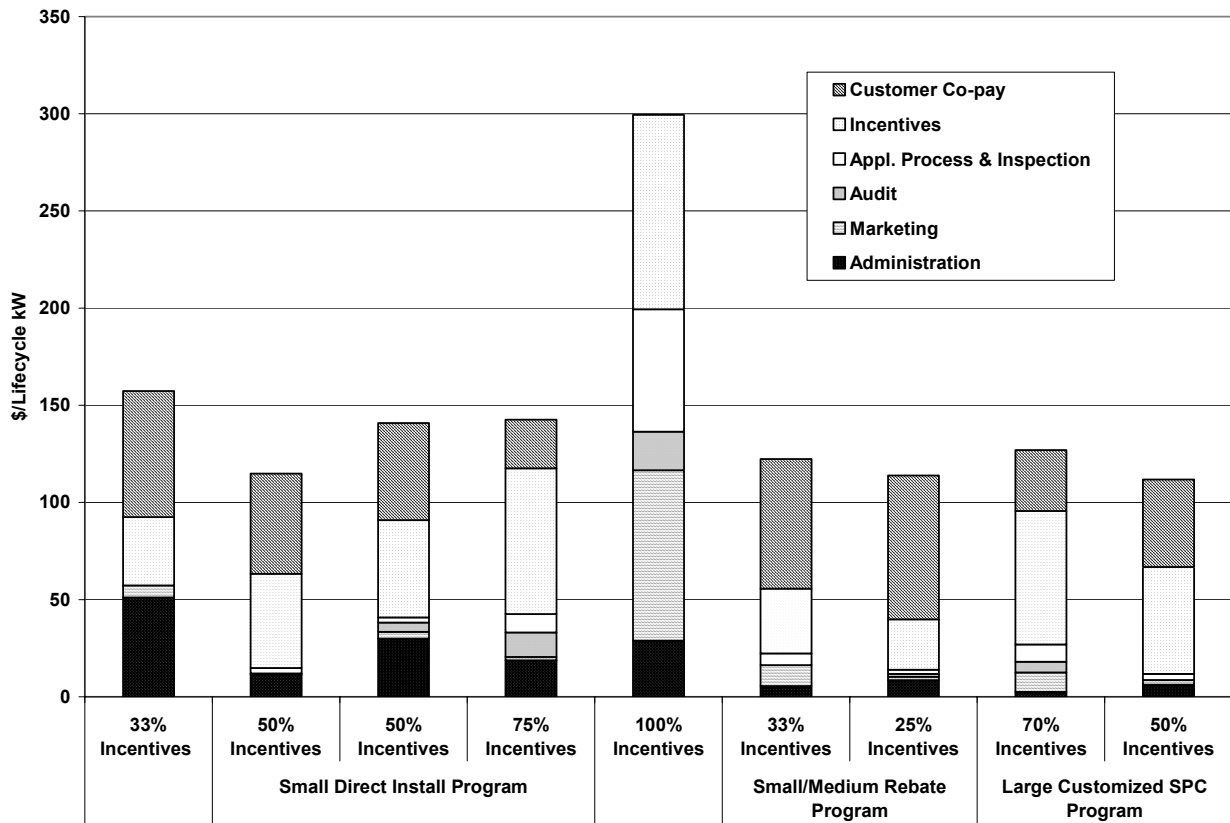
*Exhibit 6
Measure Cost per Lifecycle kW Saved for Nine Studied Programs*



Analysis of DEER and participant tracking databases revealed that measure costs are significantly higher for programs targeted at small customers. Even considering the differences in measure mix and assumptions about costs and savings, expected costs are higher for programs targeted at small customers.

For a more robust comparison of costs, we attempted to normalize the underlying measure mix and assumptions about measure costs and savings. We assumed that each program had an underlying measure mix that had an average measure cost of \$100 per lifecycle kW saved (in other words, after this normalization, the bars in Exhibit 6 would all equal \$100). Exhibit 7 presents the societal cost per lifecycle kW associated with each of these nine programs, normalized to have a measure mix that costs \$100 per lifecycle kW (note that the customer co-pay and incentives bars sum to 100 for each program).

Exhibit 7
Total Societal Cost per Lifecycle kW Saved for Nine Studied Programs
Normalized to \$100/Lifecycle kW Average Measure Cost



The normalized societal costs show that the programs targeted to small customers still cost more. The program offering 100% incentives appears to be a bit of an outlier, having excessively high marketing, application processing and inspection costs. The first small direct install program offering 50% incentives is the only program that has a lower societal cost per kW than any of the four programs targeting larger customers. This was also the program that had excessively high measure cost per kW assumptions.

Overall, the five small direct install programs have a societal cost per kW that is 44% higher than the other four programs targeted to larger customers. Even after removing the one outlier with a societal cost of \$299/kW, the four direct install programs are still 17% higher.

6. CONCLUSIONS

Program data analyzed in this study consistently revealed substantially higher costs associated with delivering energy efficiency programs to small nonresidential customers. Although much of the data were based on expected budgets for energy efficiency programs that contained varied assumptions of measure mix, measure savings and measure cost; the reported budgets from actual energy efficiency programs analyzed for this study consistently showed that it was more expensive to administer, market and implement a program targeted at smaller nonresidential customers. Furthermore, vendor survey data and actual customer invoices clearly showed an increase in measure cost (for equipment and labor) to install energy efficiency measures among smaller nonresidential customers. The study found that, based on empirical data, measure costs were generally 17% higher for small customers compared to large customers; and program costs were higher by a similar margin. Combined, the total costs to serve small nonresidential customers could be as much as 30-50% higher, depending on the program design.

This has significant implications for energy efficiency programs run in California, that are funded by the public's good charge (PGC). As discussed earlier, the CPUC has raised concerns over the equitable distribution of energy efficiency program funds, which has resulted in the IOUs developing program performance goals that target hard-to-reach customer segments, such as very small nonresidential customers. As this study has illustrated, emphasizing participation among small nonresidential customers has a significant effect on a program's ability to provide cost-effective energy savings.

Therefore, when developing a portfolio of energy efficiency programs, and the desired allocation of program funds to small nonresidential customers, consideration must be given to the incremental costs associated with serving these customers. Similarly, when evaluating the extent to which a customer segment is underserved or not, energy savings and rebates received should not be used as the sole basis to determine if these customers are receiving a proportional level of program benefit. Because relatively more public funds are required for small nonresidential customers to achieve a similar level of savings as larger customers, it should be expected that energy savings per program dollar will be lower for small customers. Furthermore, if a program is expected to reach a certain level of participation among small nonresidential customers, it should be expected that its cost-effectiveness will reflect this.

Finally, it is important to note that when considering the costs presented in this paper, that we are not advocating that the programs with the lowest cost per lifecycle kW are necessarily the best. All of these programs may be a good investment from a societal standpoint. However, there are different costs associated with serving different markets, that may be a result of the program implementation strategy, the measure cost, or the portfolio of measures typically adopted for a given customer segment. Therefore, these costs should be considered in the context of a public purpose program that is trying to maintain an equitable allocation of program funds across various market segments.

APPENDIX

Key Literature Review Sources

REVIEW OF CONFERENCE PROCEEDINGS			
Conference Proceedings Reviewed	Year of Proceedings Reviewed	Number of Relevant Papers Identified	Citation for Relevant Papers
<i>American Council for an Energy-Efficient Economy (ACEEE) Summer Study</i>	1994	2	Warner; Tolkin and Ford
	1996	0	
	1998	2	Dandridge and Green; Alexander et al
	2000	2	Lee; Wellinghoff et al
<i>ACEEE, Third Annual Market Transformation Workshop</i>	1999	0	
<i>Association of Energy Service Professionals (AESP) Conference</i>	1997	0	
	1998	1	Nore and Gillman
	1999	3	Smith et al; Cooney; Lee et al
	2000	0	
<i>International Energy Program Evaluation Conference (IEPEC)</i>	2001	2	Cavalli et al; Kinnear et al
	1993	0	
	1995	0	
	1997	0	
	1999	1	Mosenthal and Wickenden
	2001	0	
	REVIEW OF ORGANIZATIONS' WEB SITE CONTENT		
	Organization	Number of Relevant Papers Identified	Citation for Relevant Papers
California Energy Commission	2	Rita Norton; Energy Commission #P400-99-007	
California Measurement Advisory Committee (CALMAC)	**	Barakat & Chamberlin; Xenergy & Quantum;	
Consortium for Energy Efficiency	1	"Guidelines for Energy Efficient Unitary HVAC Systems"	
E-Source	3	E-Source, "'E-mail and Permission Marketing to Small Business.;" E-Source, "Best Practices in Energy Efficiency Programs for Small Businesses"; E-Source, "Serving Small Business Customers Profitably"	
Energy Ideas Clearinghouse	2	M. M. Abraham. 1995. "Energy Conservation Opportunities in Small Commercial Buildings"; IRT Environment, Results Center. 1993. "Green Mountain Power: Small Commercial and Industrial Retrofit"	
The Energy Journal	0		
Iowa Energy Center	0		
National Association of Regulatory Commissioners (NARUC)	0		
Northwest Energy Efficiency Alliance	0		
Northeast Energy Efficiency Partnership	0		
New York State Energy Research and Development Authority (NYSERDA)	0		
Regional Economic Research (RER)	1	RER. 2000. "SDG&E Small Business Sector Assessment"	
Google Web Searches	5	IMT with PECl ;ICF for PGE; CEE; Xenergy; HECO	
REVIEW OF EXISTING DATA SOURCES			
California Energy Commission		2001 Database for Energy Efficient Resources	
California Public Utility Commission (CPUC) Energy Efficiency Program Proposals	2002	Proposal and budget submittals for 29 nonresidential energy efficiency programs.	
PG&E, SCE, SCG, SDG&E		1994-2001 Energy Efficiency Program Tracking Systems	

**There are numerous studies on the CALMAC site dealing with small commercial that provide information on the barriers and figures on the size of the sector (and subsectors within that sector, e.g., how many renters) but none on the incremental cost to serve

APPENDIX

Annotated Bibliography

Source	Citation	Summary
1994 ACEEE Summer Study	Kellogg L. Warner. 1994. "Delivering DSM to the Small Commercial Market: A Report from the Field on What Works and Why." <i>ACEEE Summer Study</i> .	Barriers: energy bills small % of costs, renters, high turnover, focus on revenue not cost, lack info, little time, competing investment priorities. Don't have time or interest to learn about measures to reduce bills. Programs provide info and "sweeten" the economics of investment with incentives but still require customer involvement. Program design must be simple and efficient for customers. PG&E experience with 3 small commercial programs indicates that direct install, a turnkey approach that provides marketing, education, site analysis, incentives, equipment procurement and installation is best.
1994 ACEEE Summer Study	Elizabeth M. Tolkin and Ellen Ford. 1994. "Acceptance of Customer Contributions for DSM Among Small Commercial/Industrial Companies." <i>ACEEE Summer Study</i>	Focus groups and customer surveys in New England estimated participation rates for different small C/I customer segments under different contribution options (contribution amount, payment schedule), as regulators and intervenors want to mandate contributions for a direct install program in order to strengthen customer commitment to EE and improve program equity
1998 ACEEE Summer Study	Cyane Dandridge and Andrew Green. 1998. "Access and Delivery Strategies for Small Businesses: Buyers Clubs for Energy Efficiency," <i>ACEEE Summer Study</i> .	Program designed increase penetration of EE technologies in small commercial market in Berkeley offered two services: (1) one-stop shopping on services at a small fee, (2) direct Install program (50% subsidy). 6 of 140 sites participated Lessons learned: targeting and marketing costs too high to continue the program. Those costs could be reduced by setting up buyers club as part of the Chamber; customers reluctant to implement projects w/o seeing examples of prior work. Customers preferred to use their own contractor, not choosing from a list. Tracking & auditing system necessary to be cost-effective.
1998 ACEEE Summer Study	Larry Alexander, Rick Hornby, Steve Morgan and Val Jensen. 1998. "Feasibility of Small Customer Aggregation for the Delivery of Comprehensive Energy Services in a Competitive Utility Environment." <i>ACEEE Summer Study</i>	Aggregation may be a way for small customers to benefit in a deregulated electricity marketplace. However, suppliers perceive weak demand among small customers, despite EE offerings at reduced cost.
2000 ACEEE Summer Study	Alex H. W. Lee. 2000. "Measurement and Verification of Energy Savings at Small Commercial Facilities." <i>ACEEE Summer Study</i>	Verified energy saving associated with lighting retrofits in 3 small commercial facilities in Texas. Lighting retrofits retrofits achieved about 40-50% savings in each facility and exceeded projected energy savings by 11-40%.
2000 ACEEE Summer Study	Richard H. Sterrett, David M. Brudre, Linda Linderman and Ann Kelly. 2000. "California's Small Business Standard Performance Contract Program, The First Year." <i>ACEEE Summer Study</i>	Describes California's new SBSPC program, applications received, energy saved, incentive payouts for 1999.
2000 ACEEE Summer Study	Jon Wellinghoff, John L. King III, Mark Bailey and Jerry Lawson (2000). "ESCOs, ESPs and Small Business: A Model for Efficiency." <i>ACEEE Summer Study</i>	Small business customers have little access to EE because (1) high transaction costs for ESCOs to reach this market, (2) hard to finance improvements for renters, (3) lack capital and information. Aspen's OPUS service is designed for the small business customer. OPUS provides a third party "owner's representative" that handles the technical, contractual and financial demands of EE upgrades. The idea is to standardize business interactions with contractors, minimize their transaction costs and minimize owner's time. OPUS assumes the upgrade offers enough energy cost savings to amortize all upgrade costs (energy survey, installation, billing, financing, managing the process). Financing element through an ESP, not a bank, so there's no bank loan to pay, only an electric bill.

1998 AESP Proceedings	Dan Nore and Rich Gillman. 1998. "The Other Half: O&M Practices in Small-to-Medium Buildings." AESP Proceedings.	Telephone survey of 2500 small-medium commercial customers and 45 service supplier interviews. Data collected on building characteristics, ownership, type, energy and equipment responsibilities, building management practices, equipment O&M practices and supplier contracting practices. O&M budgets are average 1.5% of operating budgets. Outside contractors/suppliers typical. Word of mouth referral. Satisfaction with incumbent HVAC service suppliers very high. Trust, dependability and reputation as important as price. Supplier must be local.
1999 AESP Proceedings	Kevin Cooney. 1999. "Innovative Market Channels for Reaching the Small Business Sector." AESP Proceedings.	Paper suggests ways ESPs can market new products and services to small businesses based on recent survey of small businesses. (1) bundle services that are typically outsourced, (2) use trade organizations, banks to co-market, such as the Illinois Chamber-MidAmerican Energy partnership that creates a power purchasing tool for small businesses, plus fee-based energy service offerings, (3) use the web to market/deliver service.
1999 AESP Proceedings	Allen Lee, Michael Rufo, Todd Board, Mary O'Drain. 1999. "Challenges of Upgrading the Energy Efficiency of Small Nonresidential Customers." AESP Proceedings.	1999 Small/medium statewide Nonresidential Study based on 5 focus groups with contractors, 10 phone interviews with ESCO/EESPs and a literature review. Contractor and customer program awareness is limited. Barriers are greatest for <20 kW customers, who make up 80-90% of this market.
2001 AESP Proceedings	Joyce Kinnear, David Reynolds, Dan Waintroob and Patrick McCarthy. 2001. "Cracking the Code for Small Business Energy Efficiency." AESP Conference Proceedings.	Describes SVP's experience with OPUS, designed to take care of the hassle of contract management and cash flow problems for small businesses doing EE Upgrades. OPUS implements EE opportunities for the customer. Utility becomes the owner's agent, his personal consulting engineer through hteh entire implementation process. This support service can be cost-effective through standardization. 240 customers contacted. 51 OPUS agreements signed. 26 projects completed. 24 in progress. 1 terminated. Mostly lighting retrofits.
2001 AESP Proceedings	John Cavalli, Chris Ann Dickerson and Michael Rufo. 2001. "California's Hard to Reach Nonresidential Segments: Who Are They and What to they Want?"	Program elements aimed at increasing participation are vendor bonuses, customized literature, energy audits, CBO involvement and lease language
1999 IEPEC	Philip Mosenthal and Michael Wickenden. 1999. "The Link between Program Participation and Financial Incentives in the Small Commercial Retrofit Market." International Energy Program Evaluation Conference.	Citizens Utility company (CUC) found, for 200+ customers in its 1993-1995 small C/I retrofit program, that participation and adoption rates decline as financial incentives are decreased. Incentives that cover 80-100% of project cost are best.

REVIEW OF ORGANIZATIONS' WEB SITE CONTENT		
CEC	Rita Norton. 1999. "The City of San Jose's Comments on The Future of Energy Efficiency Public Benefits Programs"	"The industry has served the mature market of larger customers almost exclusively, and the small business and residential markets have been left mainly untapped. This is because the smaller customers are hard-to-reach with smaller accounts, and often need education on the benefits of energy efficiency. This barrier results in a high overhead cost, reducing the appeal of those customers. With public benefits funding, cities could play the role of customer educator for those underserved markets."
CEC	Energy Commission #P400-99-007, 1999. "A Synopsis of Comments Received from the Public on A program Planning Framework for the Public Goods Charge Transition Report Presented by Energy Commission Staff at the September 9, 1999 Committee Workshop"	"Small customers need service even absent sustainability of market, or industry); try to distribute equitability between customers and maximize reduction; how to allocate resources across portfolio; are there other criteria beyond cost effectiveness; basis for program is that there are inefficiencies; allocate research dollars to those places in market that are most uncertain; want to open up to innovative ideas on small scale; research needed to better understand some markets; small commercial is weak--need to look at standard performance contract in this area; don't confuse cost with price; trade-offs will exist among goals and among benefits; what are we purchasing with money spent on program"
CALMAC: Barakat & Chamberlin	Barakat & Chamberlin, 1997. "Indirect Costs and benefits Pilot Study of SDG&E's Commercial Lighting Program"	An Evaluation of Indirect cost benefits focused on "Customers investment criteria were used to show the value of implied set of indirect costs; demonstrated the calculation of the value of participants' higher cost of funds" "Performed monetization of the ICBs most likely: higher cost of funds; reductions in O&M costs; other direct participant costs such as downtime and training; and cost of risk"
CALMAC: Xenergy & Quantum	Xenergy & Quantum, 2000. "1999 STATE-LEVEL SMALL/MEDIUM NONRESIDENTIAL MA&E STUDY FINAL REPORT"	Split incentives: 50% of CA small businesses are renters/leasers. Of those, 95% pay the utility bill.
CEE	CEE, "Guidelines for Energy Efficient Unitary HVAC Systems"	The report mentions that rule-of-thumb sizing is frequently used for small commercial installations, and can result in incorrect equipment selection and inefficient energy use
E-Source	Clay Fong. 2001. "E-mail and Permission Marketing to Small Business." E-Source.	E-Source applies lessons from an e-mail marketing campaign for a major motion picture to the utility business.
E-Source	Tertia Speiser. 2002. "Best Practices in Energy Efficiency Programs for Small Businesses." E-Source.	More interest among small businesses due to high energy prices but EE programs. Effective program design must save small business owner time and money by being both simple and perceived to be simple by the customer. Financing is not the greatest barrier to participation; small business owners are willing to pay for upgrades if the financing methods are painless, such as no-interest financing for 2 years. Marketing methods differ: small utilities leverage local reputation and make door-to-door contacts; larger utilities offer higher incentives, aggressive telemarketing and direct mail campaigns. Successful models in both cases have achieved significant energy savings.
E-Source	Tertia Speiser. 2001. "Serving Small Business Customers Profitably." E-Source.	There has been little financial incentive for energy service providers (ESPs) to understand and serve small customers. This report report applies lessons from banking and insurance, which has proved it profitable to target small businesses, as well as two ESPs in Britain and New Zealand, which profitably segmented and served small business customers.
Google Web Search: Institute for Market Transformation	Institute for Market Transformation in collaboration with PECL -- study commissioned by PG&E: "Energy Efficiency for California Long-Term Care Facilities: A Guide for Administrators and Facility Operators"	Retrocommissioning a long term care facility typically costs between \$0.40/SF and \$1.20/SF. This estimate assumes the facility is greater than 10,000 SF. Very small facilities can have higher costs per square foot because the retrocommissioning process includes fixed costs that do not vary and tasks that must be performed, regardless of building size. If testing, adjusting, and balancing are completed as part of the commissioning process, the costs may be higher than the estimates above. A range of costs is given because the cost of a retrocommissioning project is influenced by several factors. A project with several objectives will naturally cost more than a project with fewer objectives. Also, a project with complicated controls and numerous pieces of equipment will cost more than a simple building with only a few pieces of equipment. Scoping the project to obtain the most benefit at the least cost can be challenging. The owner should have a clear vision of what goals and objectives are most important and impart that vision to the in-house staff and commissioning provider. In some cases the owner may want the commissioning provider to help them develop a comprehensive scope for the project.

Google Web Search: ICF for PG&E	PG&E study by ICF [Check PG&E website]	The "Small Business Full-Service Solution" was a pilot test of an innovative market transformation program developed and conducted by ICF Consulting, Inc. (ICF) in a project sponsored by Pacific Gas & Electric Company (PG&E). With its beginnings in early 2000, this project was developed in the framework of Market Transformation (MT) goals. As such, it must be evaluated in the context of the 1999-2000 "pre-deregulation" energy situation in California, and the energy efficiency program goals of the major power utilities and California Public Utilities Commission (CPUC) at the time of program inception. Since that time, the "California Energy Crisis" has forced a shift back to more direct demand reduction programs in 2001. Although the ICF program was intended to demonstrate a business concept rather than result in significant kW / kWh reductions, the model developed may prove to be a valuable component in re-establishing sufficient infrastructure to deal with California's energy plight. The "Small Business Full-Service Solution" program was designed as a pilot test of a new business concept to establish "Auditor Broker" entrepreneurs to reduce market barriers for provision of energy efficiency services to small and medium-sized commercial businesses. This market sector has traditionally been an under-served, expensive, and difficult sector to penetrate. Many analysts of the energy efficiency industry are unsure whether energy efficiency efforts can be made self-sufficient in this sector. This pilot was an effort to determine if a comprehensive services approach could become acceptable to the small commercial sector and economically viable for auditor-broker "franchisees." The Small Business Full-Service Solution is the archetype of the intentions of the Third-Party Initiative (TPI) effort as it provides an opportunity to test a new concept for market transformation. This element is one of the key strengths of the TPI program as found by the Evaluation of the 1998 Third Party Initiatives Program.
Google Web Search: Center for Energy and Environment	"Achieving Energy Efficiency in a Restructured Electric Utility Industry" Prepared by: Center for Energy and Environment	The energy efficiency industry is much smaller overall, and includes many smaller, newer firms (insulation contractors, lighting contractors, etc.) who do not have the same level of perceived trustworthiness. Many energy efficiency products and services are purchased infrequently, and in addition, their nature is such that it is difficult for consumers to verify their quality before (or sometimes even after) buying them. Therefore, the transaction costs for the (smaller) consumer in obtaining and processing information about energy efficiency and in verifying that the information is trustworthy are much higher than they are for energy supply, and cause the level of investment in efficiency (and possibly the return on those investments that are made) to be less than optimum for society... the purchase decision (relative to credence goods--which ee products are) is heavily influenced by the credibility of the seller or any other information sources.
Google Web Search: Xenergy	1999 Xenergy Small-Medium Non Residential MA&E report	"In interviews with EESP/ESCOs relative to participation in SPC programs--'Not cost beneficial for EESP/ESCO to participate: marketing costs to solicit these small potential customers and the administration costs are not worth the incentive.' Further, 'A significant difference between small and large commercial customers is their awareness of the availability of (ee) and other energy services from different providers...small customers are almost completely unaware of such services from non-utility providers.' 'Small customers also have considerably less understanding of energy performance contracting mechanisms...only about 5%'"
Google Web Search: HECO	Hawaii has Discovered Energy Solutions for Small Business. Office of Building Technology, State and Community Program (EE and Renewable Energy--USDOE)	"Small business owners indicated "a lack of time, knowledge, trust in the vendors, cap-ital, and cost-effectiveness" as the primary reasons that retrofits have been slow to catch on. Small business owners perceived energy-efficiency efforts as absorbing excessive time, necessitating that they haggle with contractors to obtain bids. Some owners felt they were not educated enough to make a fair assessment and comparison of services, while others held a certain amount of distrust toward contractors, doubting that the promises made were accurate. Many owners felt that it would be difficult to finance capital upgrades, which would require a large expense up front--one that might never be recaptured. According to HECO's Sam Nichols, from the Energy Services Department, "From the lighting contractor's side, the small business market is often expensive to service due to small size and limited opportunities for retrofits. Nevertheless, we felt it was an important market to target to help the small business owners capture the energy savings we knew were out there." To attract small business participation, HECO tailored Energy Solutions for Small Business to overcome stated barriers and to meet specific small business needs. Energy Solutions for Small Business was developed as a market transformation project that used aggregation of many small customers into one bidding package as the primary solution. Aggregation would save time for the customer and the vendor; remove distrust of vendors on the part of the customer; provide verifiable energy information; and allow for the verification of savings once the retrofit was completed. The utility took over the role of marketer and coordinator of the retro-fit project, which minimized the amount of time required by small business owners. Instead of dealing with several contractors"

REVIEW OF EXISTING DATA SOURCES		
CEC	2001 Database for Energy Efficient Resources	Price estimates for wholesale and end-user markets for selected technologies
TPI Proposal to CPUC 2002	ADM--proposal to the CPUC Statewide Convenience Stores Energy Efficiency Outreach Program	"Market research has shown that the most effective way of delivering information on energy efficiency to owners/operators of convenience stores is through face-to-face interactions at individual facilities. As discussed in Section 3, owners/operators of small convenience stores represent a "hard-to-reach" market. Research into this market segment to identify the common practices of owners/operators of independently owned convenience stores has shown that owners/operators of such stores are usually busy with the day-to-day operation of their facilities and do not feel they can afford the time to attend workshops and seminars or to read and digest materials mailed to them."
TPI Proposal to CPUC 2002	San Jose Silicon Valley Chamber of Commerce Small Business Access to Service Efficiency Program, for CPUC consideration in the selection of third party 2002-2003 Energy Efficiency Programs	"These businesses operate with a "day to day" focus. Key barriers are: ? Lack of Time and Focus – Time and ease of use; ? Lack of Credible Information; ? First Cost of New Equipment Implementation – Cash flow is a major difficulty with small businesses; Tenant Landlord Spilt Incentives "
TPI Proposal to CPUC 2002	Lodging Industry Energy Efficiency Program. January 15, 2002 2002 Energy Efficiency Program Selection Submitted by: ADM Associates, Inc.	"Many small hotels and motels are owned and operated by individuals (e.g., first-generation immigrants for whom English is not the first language) whose primary interest and concentration are on maintaining a profitable operation. --lack of time to investigate ee technologies therefore often use technologies that are less energy efficient. The lack of information about the benefits of energy efficiency requires a more targeted and direct approach to disseminating information on the benefits of energy efficiency to reach decision-makers"
TPI Proposal to CPUC 2002	Lighting Retrofits for Small Businesses Inside Hard-to-Reach Enterprise Zones. Energy Efficiency Proposal/ American Lighting & Distribution, Inc.	"? This program is intended to address market barriers that have historically been difficult or impossible to overcome. The products offered in this program will be provided to small business owners using a turnkey approach. This turnkey method is likely the only way possible for these hard-to-reach small business owners to place energy efficient lighting products inside their businesses. These small business owners seldom participate in utility programs for the following reasons: ? Cash flow - These business owners face cash flow challenges each month and are typically not able to afford a lighting upgrade – even if it offers a fast return on investment. ? Product Awareness – These business owners are too busy running their businesses to be considered experts on lighting efficiency. These business owners are not aware of the benefits and cost savings that can be derived from energy efficient lighting measures and practices. ? Skepticism – These business owners have been duped by contractors in the past, and are very skeptical of programs that sound too good to be true. ? Unfamiliarity – These business owners have frequently never even heard of the rebate or incentive programs that are available. ? Ownership – The business owner that pays the Public Goods Charge is not usually the owner of the building. The building owner seldom pays the tenant's cost of power and the business owner has a hard time rationalizing using working capital to pay for upgrades that don't directly benefit his bottom-line. ? Overlooked – Many of these businesses are so small that they have never been marketed to or solicited by lighting contractors. Most of these jobs are so small that many contractors will not perform the work and fill out the rebate paperwork. ? Economically Distressed Areas – These businesses are located in economically distressed areas and face a unique set of business challenges inherent with the neighborhood or area of the state where they are located."
TPI Proposal to CPUC 2002	Local Commercial Energy Efficiency and Market Transformation Program. Bottom Line Utility Solutions	? Higher costs- Typically, high efficiency products are purchased at a premium cost. Small commercial customers do not have the cash reserves to plan on energy efficiency improvements with high efficiency products because of the cost premium. ? Lack of financing – The small commercial customers do not have easy access to financing for high efficiency equipment. They are also apprehensive to take on more debt than what they already have on the books.

TPI Proposal to CPUC 2002	Energy Efficiency Discovery© A Proposal for Small & Medium-sized Manufacturers	<p>Market Barriers:</p> <p>There are over 381,000 small and medium-sized U.S. manufacturing establishments, contributing more than half of the total U.S. value in manufacturing. However, productivity among smaller manufacturers is growing at half the rate of larger manufacturers. This is due in part to the limited high-quality, unbiased advice and assistance available to small and medium-sized manufacturers, high up-front sales costs and difficulties in locating adequate financing (Source: U. S. Department of Commerce National Institute of Standards and Technology).</p> <p>Structural changes in our economy have resulted in a change from the old economic development models of providing government assistance through large centralized organizations to new approaches fundamentally and inextricably linked to the decline in global competitiveness of the U.S. economy (Source: Commentary/Spring 1993, Atkinson). According to an article entitled, The Next Wave in Economic Development, new economic development approaches need to be based on a customer-driven, industrial services model and services need to be delivered through decentralized, industry-driven, and sectorally based organizations.</p> <p>Principles for customer-driven, industrial services model of economic development include (but are not limited to) elements that</p> <ul style="list-style-type: none"> • Provide services (e.g., technology, training, market development) to firms that directly improve their ability to compete in global markets; • Target assistance to hi-tech and traditional manufacturing industries; • Establish organizations that respond to customer needs (often non-profit, industry led, privately run, organizations); and • Provide assistance on a regional and industry sector basis. <p>The industrial services model of economic development proposed above relies on government programs, but stresses the importance of decentralization, integration of services, leveraging and industry “ownership” of programs.</p> <p>California’s Market Barriers</p> <p>The manufacturing sector in California (particularly small and medium-sized) have experienced what CMTC euphemistically characterized as the “triple whammy”:</p> <ol style="list-style-type: none"> 1. Decline in Industrial Activity <ol style="list-style-type: none"> 1.a. 18 month decline in industrial production 1.b. Operating capacity sank to lowest point in 18 years (Source: Federal Reserve Board) 2. California’s Costly Energy Crisis <ol style="list-style-type: none"> 2.a. Triple digit energy cost increases 2.b. Threat of involuntary power outages 3. Small and Medium-sized Business/Manufacturers Hit Hardest by Utility Rate Increases <ol style="list-style-type: none"> 3.a. Disproportionate share of rate hikes 3.b. Limited participation in efficiency programs 3.c. Termination of inverted rate structure 3.d. Limited venues for absorbing or passing on increased costs 3.e. Curtailed productivity <p>More specific to this, past summer, California’s small and medium-sized manufacturers lacked trust in, demonstrated limited understanding of and/or did not believe in utility/government energy solutions. Based on an informal poll conducted by CMTC in May 2001, the major reasons cited by manufacturers for not taking advantage of energy efficiency programs were</p> <ul style="list-style-type: none"> • Not enough expertise or internal resources to implement (programs too complicated) • Programs don’t offer solutions appropriate for my company • Don’t trust utility and/or government solutions <p>The majority of electrical energy use in the manufacturing sector is in direct process, process/refrigeration applications, and machine drive/boiler applications. Converting and/or replacing equipment in these high-energy use applications are capital intensive and require expert analysis. Manufacturers, particularly small and medium-sized, do not have needed expertise on staff to conduct the necessary analysis or develop the return-on-investment case for making such improvements. Investor owned utilities have provided on-site energy audits, energy efficiency rebates and information to businesses to assist with energy improvements. Due to the need to take quick action this past summer and because of the number of customers, investor-owned utilities focused on-site assistance on large industrial energy users and government/IOU energy improvement incentives focused on lighting and HVAC improvements. Small and medium-size manufacturers were relegated to mail-in or on-line energy audit templates, designed generically to cover electrical/gas use patterns of common businesses such as laundries, schools, restaurants, etc. The process for applying for energy efficiency incentives was considered cumbersome, confusing and complicated, particularly if a company was serviced by more than one investor-owned utility (e.g., Southern California Edison for electrical service and Southern California Gas for gas service). Small companies have limited assistance available, to walk them through the process.</p> <p>Small and medium-sized manufacturers did not consider investing in lighting or HVAC improvements as high priority items in that manufacturing operations is primarily focused on process with unique and sometimes costly equipment. In CMTC’s experience, many process improvement opportunities result in significant energy savings/efficiencies but have little or no visibility by energy experts because of lack of industrial process management expertise. Small and medium-sized manufacturers tend to be more responsive to making improvements that demonstrate bottom-line benefits, include attractive return-on-investment opportunities and increase productivity (i.e., process improvements). The media also played a role in how the public responded to California’s energy crisis. Due to negative media attention many Californian’s including small and medium-sized manufacturers became wary and skeptical of energy solutions—they believed (and continue to believe) that the energy crisis may not have been real and that once the politics of the issue have subsided, rates will go back to where they were pre-2000. Another phenomenon of this past summer’s extensive publicity is that despite the coverage on energy issues, the average consumer including the business community, remain confused about who their energy provided is or the difference between municipal or investor-owned utility structures. In general, because energy costs have not been a major part of operating costs, most small business paid little or no attention to their utility bill or its cost structure. We are concerned that small and medium-sized manufacturers will continue to be confused by the many choices and opportunities available. In short, the small business community lacks energy awareness. CMTC is confident that expanding energy efficiency service provider opportunity to include non-utility 3rd party service providers will increase energy efficiency participation. This summer (2002), small and medium-sized manufacturers are going to be introduced to another change in their utility billing process—time of use changes. Up through this year, the majority of small electrical customers (e.g., GS 1 SCE’s customers) were on a two tiered rate structure based on energy use. Currently, utility companies are converting these customers’ existing meters with the time-of-use meters to calculate different rates based on the time of usage (on-peak, off-peak, etc.). On-peak energy use is significantly more expensive than mid or off-peak usage. Most small and medium-sized manufacturers operate primarily during on-peak hours and lack the expertise to convert their production process to less expensive morning/evening hours.”</p>
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TPI Proposal to CPUC 2002	Delivering Small Business Energy Efficiency in California through the State-sponsored Small Business Development Centers, Financial Development Corporations, and Community-Based Organizations	<p>"In the 1999 utility Express Efficiency Program(s), the following factors were defined as significant barriers that impede small customer efficiency upgrades:</p> <ul style="list-style-type: none"> - Relative to their other business and operating expense priorities, these customers often don't find energy costs to be a significant concern and consider these costs to be "fixed" rather than variable - These customers lack the expertise, staff, experience, time, and other resources to assess energy efficiency opportunities comprehensively and confidently - Many of these customers are confused about what programs currently are available and about their differences and advantages - Most of these customers lease their space, and they and their building owners believe that they are unlikely to capture the benefits of efficiency upgrades - These customers are skeptical of the information provided by possible service providers"
TPI Proposal to CPUC 2002	2002 Energy Efficiency Program Proposal for Energy Efficiency Rulemaking Proceeding R.01-08-028 City of San Ramon Energy Alliance Program Submitted by: Capacitas Consulting	<p>"Both of these programs had good participation rates from a motivated participant group. While customers were interested in saving energy, many were either leasing property or did not have the capital necessary to install or act upon their interest. In addition, their lack of experience made choosing a vendor a difficult process. (Typical customers will include small grocery, small industrial process cooling, small and large commercial space cooling, restaurants, and all customers with cooling or refrigeration load.)"</p>
TPI Proposal to CPUC 2002	A Local Small Business Energy Efficiency Program in Santa Cruz, Monterey, and San Benito Counties Prepared by Ecology Action of Santa Cruz	<p>"Market Barriers and Program Rationale</p> <p>Despite seeing a higher percentage of operating costs spent on energy compared to larger businesses, small businesses face a number of market barriers when implementing energy efficiency. Combined, these barriers result in the small commercial market which is very challenging to target for energy efficiency programs. Key barriers include:</p> <ul style="list-style-type: none"> · Information or search costs: Small businesses lack the time and expertise to evaluate efficiency opportunities. · Performance uncertainties: Small businesses can be uncertain about energy efficiency technologies and the skills and honesty of local contractors. · Transaction costs: Small businesses do not have the time or financial resources to develop and implement new projects. · Split incentives: Tenants are reluctant to invest in a landlord's property and owners do not want to invest in energy efficiency when the tenant pays the bills. · Financing: Costs are immediate while savings occur over time. Initially, cash flow is negative and research of optimum loan products is time consuming. · Small jobs: Installation and program overhead costs reduce cost-effectiveness. · Controllability: Business owners view energy costs as fixed rather than costs they can control. <p>These barriers lead to the small commercial sector being an underserved market. A successful small commercial program needs to simultaneously overcome most of these barriers in order to achieve significant participation. The proposed program offers comprehensive and convenient technical assistance from non-biased parties and addresses the first three barriers. Split incentives and can be dealt with through an effective screening process (targeting owner occupied businesses and businesses with long term leases). Financing and access to capital can be addressed with incentive payments and SafebidCo or private lender financing. Active project evaluation and quality control for each job will also be provided through the program to ensure that the small commercial customers receive the best service."</p>

TPI Proposal to CPUC 2002	Energy Efficiency Proposal for PY2002 - 2003 Energy Star® CFL Program for Small Hardware and Grocery Retailers An Initiative to Benefit Hard-to-Reach Customers. Ecos Consulting	<p>"Customers do not Understand the Benefits of CFLs. Many consumers still do not understand the lifetime and financial benefits of compact fluorescent lighting. This makes many consumers skeptical about paying a higher price for an Energy Star CFL. Non-English-speaking customers face an even harder time gathering information about Energy Star lighting products. The amount of information available at the point of sale has increased, but often this information is available only in English. Thus, non-English speaking consumers may have access to Energy Star lighting products, but not to the appropriate information that would enable them to make effective purchasing decisions.</p> <p>! Higher Retail Prices and Limited Selection. CFLs are significantly more expensive than incandescent bulbs (\$0.25 versus \$10). The higher up-front cost often deters consumers from trying the relatively new technology. In addition, the price of CFLs in local hardware stores is often significantly higher than at discount retailers like Home Depot. Small retailers face a higher wholesale cost for CFLs, since they buy in smaller quantities. (Some hardware stores purchase through a coop-buying warehouse in an effort to achieve lower prices.)</p> <p>In addition, due to lower overall sales volume, small retailers are forced to utilize a higher retail mark-up. As a result, shelf prices can be up to 50% higher in hardware stores than in large home improvement or mass merchandiser stores. It appears that small grocery stores, while they stock some lighting products, do not tend to carry CFLs. A successful lighting program, therefore, must be structured to defray the costs associated with purchasing a CFL, both for the retailer and the consumer.</p> <p>! Smaller Retailers are More Difficult to Recruit. Small hardware stores are typically harder to recruit into utility programs than larger retailers. Based upon our experience in the Pacific Northwest, we have found that small retailers are often discouraged by the high cost of ordering new product, time required to fill out program forms, long delays in receiving utility incentive payments once activities have been completed, and prior lackluster sales of older generations of CFLs. Owners of small grocery stores may not receive program announcements, as these stores are not viewed as traditional lighting retailers. In addition, ethnic grocery stores may pose an even greater challenge, especially in cases where the owner is not fluent in English and has difficulty understanding program rules/ requirements. Therefore, a program that requires a substantial number of forms and procedures and is not tailored specifically to the retailer will be unattractive to most small hardware and grocery stores."</p>
TPI Proposal to CPUC 2002	Energy Efficiency Proposal Statewide Non-Residential Retrofit Small Business Energy Survey Program Submitted by Energy Controls & Concepts	<p>"The very small non-residential market, 20 kW demand and under customers, is by far the toughest to reach. In addition to the various economic barriers, many of these businesses are tenant-based, and thus efforts to instill energy efficiency is often more difficult because landlords don't pay the bills. Also, tenancy is sometimes short-lived. Investments in the "energy infrastructure", is often predicated on first cost because landlords often need to assist smaller tenants in improvements of real property. For a landlord to reduce first cost in making improvements, the investments typically aren't made in efficient lighting equipment and HVAC. This also contributes to the idea that the higher power density is in smaller buildings. In essence, tenant-based businesses are often less efficient because owners don't pay the electricity and gas bills. The organizations / companies that would otherwise service these customers include Contractors, Energy Service Companies (ESCO's) and Utilities. Traditionally the service organizations have focused their attention with larger customer, where capital dollars are more prevalent. Other challenges for energy service organizations include start-up cost, mobilization and sales and marketing expense, all noteworthy issues. Also of importance, smaller incentives have historically been proposed with respect to smaller customers. Focus has been primarily menu-based, such as Express Efficiency, presumably because of the cost to administer. Larger incentives such as the Standard Performance Contracts (SPC) programs would reward the larger customers with greater incentives based on kW and/or kWh savings. Service organizations will typically follow the money, another reason why the smaller markets don't get the attention. Language is another barrier to success in the HTR market. Sometimes, it is second-generation family members that support the language challenges of the small business owners. It is sometimes costly to reach the many various markets. Personalizing direct contact with the market can also be costly with the many various ethnic groups. Consequently, past programs have created greater incentives for the larger non-residential market, which is by far easier to reach, and have kind of gone the simpler easier route of menu based programs in the smaller markets. Although this has made a great deal of sense from an administrative perspective, and certainly taking into account cost considerations, it seems that tougher markets where incentive dollars may best be utilized in the future. ECC's goal is to also help support whatever incentive programs are available in the course of marketing surveys in the HTR market. The incentive barriers will best be supported through direct customer contact under our proposed program. Another barrier for some customers is their limited access to self-performing energy surveys. Of roughly 1800 very small non-residential customers surveyed by ECC in the hard-to-reach marketplace in 2001, less than ten (10%) percent of those customers had personal computers on-site. Even less had Internet access in their businesses. It is probably not reasonable to expect a high influx of these customer's self-performing energy surveys. Our goal is to support the efforts of the Commission and the IOU's in reaching these customers. Though these are just a few of the barriers, they are representative of the challenges in the smaller markets. For companies to have success in this arena both the service offering and incentives have to be exceptional and synergies are likely of greater importance. Though some progress has been made through the years, we still fall short of successful penetration in the smaller non-residential market. Although the major market barriers all point to the financial resolve of parties, reaching the customer and motivating the decision is obviously a key element to succeeding. Below we have delineated what we perceive to be the primary barriers to the very small non-residential marketplace as follows:</p> <ul style="list-style-type: none"> •Cost of Educating Customers on Benefits of Energy Efficiency •Language Barriers •Time / Value Allocation for Individuals to Survey Projects <ul style="list-style-type: none"> o Data Gathering o Analysis o Report Generation o Delivery Mechanisms •Initial Capital Requirements / Project Funding Cost •Ability to Finance •Cost / Benefit Associated to Resource Allocation (requirements for larger margins due to higher marketing and operating expense) •Tenant Based (shorter lease periods/ month-to-month) •Incentives"

TPI Proposal to CPUC 2002	The County of Los Angeles Office of Small Business Energy Efficiency Program 2002 Energy Efficiency Program Selection	"Small business owners usually lack the time, knowledge or funding to add energy efficiency to their long list of urgent survival issues. However, rising energy costs and the current recession have brought energy awareness to the top of their list. While small business owners are now more aware of energy costs, this attentiveness requires information and guidance to translate into action. OSB's proposal will facilitate energy efficiency projects by instructing small business owners on the value of energy efficiency in seminars and workshops, then reinforcing that information with on-site evaluations."
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<p>TPI Proposal to CPUC 2002</p>	<p>Local Very Small Nonresidential, Local Small Nonresidential and Local Hard to Reach Nonresidential Program Submitted by California Small Business Education Foundation</p>	<p>For California's very small and small businesses, their owners and operators focus on the projects and work before them. They do not have the staff or time luxuries that allow them to plan for contingencies, seek out complex information, or filter through messages they perceive as designed and delivered by those who are not small businesses themselves.</p> <p>Because small businesses tend to not have funds held in reserve, access to significant lines of capital, or substantial lines of credit, increases in costs associated with business operations tend to have serious negative consequences.</p> <p>Such has been the case regarding fluctuating and escalating energy prices in California. A survey of 350 hard-to-reach and ethnic small business owners in California conducted by the CSBEF in September 2001, found that 90% of small and very small business owners said that the current cost of electricity was an obstacle to their stability and growth. Some 97% reported that the cost of their electric energy had increased significantly in the past six months. Importantly, 50% wished they could spend more time or resources to devote to energy conservation. Nearly one-half said they were not aware of the various energy efficiency assistance and rebate programs. Fully 91%, over nine-in-ten, surveyed small and very small businesses said they would like to learn more about energy efficiency strategies, rebates, and incentive programs.</p> <p>In October 2001, the National Federation of Independent Businesses reported findings of their poll indicated that 76% of small businesses said their total energy costs had increased in 2001. Some 75% of these businesses indicated they had to adjust downward their earnings and profit projections because of increased energy costs.</p> <p>For businesses facing increased costs, workforce reductions, and vacillating income projections, assigning staff to seek out energy information, spending time surfing the net for energy conservation strategies, or taking the initiative to respond to billing stuffers, etc., are not reasonable priority areas. So for them, the result is a lack of awareness about or information concerning energy efficiency programs, incentives, and strategies.</p> <p>Cultural communication practices, language preferences, and the relative isolation of enclaves of ethnic-based small businesses can serve as barriers to the flow of, and access to, information about energy efficiency. The 2000 U. S. Census indicates that almost 30% of California's businesses are minority owned (based on 1997 data). The U.S. 1997 Economic Census reported that nearly 750,000 of California's 2.6 million businesses (those with employer identification numbers, individual proprietors, and classical "mom and pop" operations) were minority owned. California is one of the nation's most ethnically diverse states and features a rich language-diverse population. One need only pass through the Spanish-language business enclaves of the Central Valley and the Asian business communities of Little Saigon, Little Korea, etc., and see the business signs in native languages to ascertain that significant numbers of small and very small businesses are owned by individuals with primary languages other than English and who do business with non-English-speaking customer communities.</p> <p>And, while language and cultural differences can pose a market barrier to energy efficiency information, the size of California's small and very small businesses presents a very real barrier to services and information. As government agencies and funding sources stress economies of scale and program efficiencies, the reality is that reaching geographically isolated, and language "different" businesses costs far more than reaching "traditional" businesses via mass marketing and mass advertising. Reaching small and very small businesses face-to-face to spend the time with them necessary for information to be shared and questions to be answered takes a tremendous amount of labor and outreach effort. These communication realities run counter to the pressure of utilities and others to "reach the largest number of customers at the least possible cost."</p> <p>Moreover, it is quite easy for small and very small businesses to be effectively overlooked because of the "incremental" realities of influencing change in a small business. If a major provider can work with ten "large" electric energy users to encourage a 10% reduction in energy usage, that provider has to have a relatively modest program infrastructure. However, to achieve the same "final" amount of energy savings among a small business cohort, that provider might have to work with 200-300 very small and small businesses. This would require a much larger program infrastructure and much higher program delivery costs. Historically, government agencies have not understood or fully supported the costs associated with serving very small and small businesses and the budget needed to "level the field of access" among all businesses, large and small.</p> <p>In the thousands of conversations held among CSBEF and CSBA members, and in the numerous commissioned surveys on small businesses, CSBEF has learned that small business owners prefer contact by other small business representatives, or at least by those they see as small business "friendly." In California, very small and small business operators tend more to messages tailored for them, instead of envisioning the relevance to their situation contained in mass advertising and messages. CSBEF has found that personal meetings, telephone calls, in-community small group sessions, door-to-door outreach, and one-on-one/face-to-face exchanges tend to work best with small business owners. In their very hectic work day, a small business owner/operator may not take 10 minutes to read a slick magazine article about energy conservation, but they may take 15 minutes talking face to face with a small business advocate visiting their workplace to talk about this subject.</p> <p>In our view, this is the reality of communicating EFFECTIVELY with California's small and very small businesses. Mass marketing and advertising campaigns may have some success at building awareness. However, intensive interpersonal communication tends to have the greatest prospect of success at changing behavior and motivating a person to adopt a course of action.</p> <p>Because these more personal communication and intervention strategies are more costly than mass outreach, they have tended to not be funded and, therefore, not be provided to the hundreds of thousands of California's small businesses. It is this intensive outreach and program service strategy that is the basis of CSBEF's proposed program and, as such, may well represent our greatest obstacle to being funded and, therefore, the greatest obstacle to very small and small businesses being provided with the energy conservation and efficiency services they so desperately need."</p>
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TPI Proposal to CPUC 2002	<p>2002 Energy Efficiency Program Selection: Energy Efficiency Business Connections "EE Connect" A proposal to perform Small Business Recruitment Services Submitted by Honeywell DMC Service Inc.</p>	<p>"As described more fully below, it is believed that most small businesses do not take part in utility programs due to a lack of:</p> <ol style="list-style-type: none"> 1. Utility Focus on this sector 2. Vendor and service provider focus 3. Customer knowledge of the options available to small businesses 4. Sufficient customer resources (time, staff, etc.). <p>Overcoming Market Barriers</p> <p>In general small non-residential businesses have very positive attitudes toward energy efficiency, however few actually install energy efficiency products. The objective of the EE Connect Program is to raise awareness in the small business community of the benefits of energy-efficient products and services and to provide a direct linkage between customers and vendors for the completion of energy efficiency projects. In the proposed program, a variety of market barriers that prevent customers from fully seeking and obtaining cost-effective energy-efficient products and services are addressed. Success in transforming markets means reducing or eliminating barriers to allow the private competitive market to supply the products and services in a sustainable manner. The EE Connect Program will address the barriers as follows:</p> <ol style="list-style-type: none"> 1. Utility Focus: Honeywell DMC will perform marketing and inside sales support. We will advertise and direct mail market to find the best candidates for the program. Rather than using a mass-market message that may only capture the larger commercial customers, our target will be the very small and hard to reach customers. Under EE Connect, HDMC has no vested interest in finding and treating larger projects as may have been the case with utilities and vendors in the past. Our "vested interest" will be in finding and serving the smallest and hardest to reach. 2. Vendor focus: The vendor community does not actively market products or services to the small businesses due to the high cost of customer acquisition. It is this key barrier that the implementation of this Program will document and target to overcome. As stated in the 1999 Small Commercial Study ** :Small customers need help moving through the stages that end in project implementation. Improved linkages should be made between program activities that prospect for efficiency opportunities and activities that lead to the implementation of those opportunities. A crucial need is ways to link 'warm lead' customers with qualified suppliers. [emphasis added] Energy surveys have been around for years. Linking customers with the services and the vendors that result in implementation has been a major missing link. Customer acquisition costs for a large project are very similar to those of a small project but acquisition costs of \$1,000 over a \$5,000 project may ruin the cost-effectiveness while \$1,000 over a \$20,000 project may not. Our role will be to develop our program to cut the sales costs so that the smaller jobs will become more desirable to the vendors. 3. Customer Knowledge: Information of utility sponsored programs is readily available. Utilities have spent millions of dollars on web sites, literature, and resources. Imparting this information as knowledge to the customer will be the task of the EE Connect Staff. Each staff member will be armed with utility program descriptions, flyers, brochures etc. In addition, technical training and information on other free or low cost programs will be provided. HDMC currently manages the Metropolitan Commercial Water Rebate Program in Southern California. We performed the PG&E Energy Efficiency Resource Center from inception until 1999 when PG&E restructured it as an "in house" effort. Our EE Connect Program will be modeled after the EERC at PG&E with an exclusive focus on smaller, hard to reach customers. 4. Sufficient Customer Resources: The barrier of getting a small business to focus attention and resources on an energy efficiency project can be overcome by using our resources, who will see the process through from beginning to end, instead of theirs. Our EE Connect Staff can do leg work, set up standardized processes and assist in seeing a project to completion. Each customer who is identified for marketing will be tracked through the process. Our goal and a portion of our revenue will be tied to getting customers through the entire installation process. Our Six Sigma Process will play a key role in helping to identify the size of this barrier and the potential solutions to overcoming it."
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TPI Proposal to CPUC 2002	High Quality Energy Efficient Small Commercial Lighting Training Submitted by ICF Associates, Inc., January 15, 2002	<p>"The small commercial sector (which is broadly defined here to include all small non-residential energy users, those with electric demand of less than 500 kWh) is often neglected as far as energy efficient lighting programs are concerned. Large commercial and industrial energy consumers have the resources to employ lighting designers and architects to ensure an adequate lighting design. Smaller energy users, particularly those undertaking lighting projects of less than 20,000 square feet of affected space, generally rely on contractors and the lighting supply chain (lighting distributors and manufacturers' representatives) for lighting design assistance. By training contractors and lighting decision-makers in proper lighting design concepts, and in how to "sell" the higher first-cost equipment to prospective customers, the small energy users can have access to more practical lighting systems – those that not only are energy efficient, but also provide a better working environment. This program addresses the top two barriers listed in Rulemaking 01-08-028; (1) Higher start-up expense for high-efficiency measures relative to standard-efficiency measures, and (2) Lack of consumer information about energy efficiency benefits. Taking them in reverse order:</p> <ul style="list-style-type: none"> •Lack of consumer information about energy efficiency benefits: When a utility rebate program or other incentive program encourages installation of energy-efficient equipment but does not consider whether it is deployed effectively, it can result in a lighting project that does not meet the needs of occupants. This confuses customers about energy efficiency benefits, and exacerbates stereotypes that energy efficiency must mean sacrificing quality and comfort. This actually inhibits long-term implementation of these measures, both in the same space or in new space the tenant occupies. For occupants to clearly understand the benefits of energy efficiency, they must experience high-quality design. This program is meant to ensure that contractors are equipped to ensure that customers not only see energy savings, but also have a good experience with the equipment. •Higher start-up expense for high-efficiency measures relative to standard-efficiency measures: Customers will often see a higher first cost for high-efficiency measures as compared to standard-efficiency measures. This training helps overcome this barrier by giving contractors the tools to up-sell to customers. It also creates additional value-added for the higher-cost system by ensuring it performs better not just in terms of energy savings but also in terms of appeal and visual comfort. Customers will begin to see additional value that will help overcome their reluctance over higher initial start-up costs."
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<p>TPI Proposal to CPUC 2002</p>	<p>Institute of Market Transformation. "Promotion of Energy Efficiency in California Long Term Care Facilities."</p>	<p>"California's long-term healthcare (LTC) sector comprises over 1400 facilities, most of them classified as small to medium-sized businesses. Nationwide, LTC is one of the highest energy-consuming commercial building sectors. Primarily consisting of skilled nursing facilities (SNF), the sector also includes facilities offering residential care (RCFE) and intermediate care for the developmentally disabled (ICF/DD). Operation of these buildings is continual and often sustained on a minimal budget. LTC administrators additionally face overwhelming compliance issues for their buildings, staff, and patients that often overshadow the need for improved energy efficiency. Exemption from much of Title 24, as administered by the Office of Statewide Health, Planning, & Development (OSHPD), and a lack of information on the financial and non-energy benefits of energy-efficiency measures also contribute to the poor performance associated with these buildings.</p> <p>During 2000-2001, IMT, under California public-benefits funding administered by the Pacific Gas & Electric Company (PG&E), implemented an energy-efficiency program targeting California's LTC sector. A market assessment showed that these facilities typically operate aged and inefficient building equipment and face numerous perceived barriers to increasing energy efficiency despite ranking this issue as an important priority. As expected, barriers include time and financial resources, but administrators also cited lack of information on energy efficiency, regulatory difficulties, and lack of proper training for maintenance staff. Working with Portland Energy Conservation, Inc. (PECI), IMT addressed the information barrier through seminars for LTC administrators on energy-efficiency measures appropriate for their buildings. IMT also documented cost-effective energy savings through two retrocommissioning demonstration projects. The program was successful in disseminating useful information on energy efficiency to a hard-to-reach sector, and revealed additional cost-effective energy-saving opportunities for the long-term care sector.</p> <p>The prevalent use of old and inefficient building equipment define LTC facilities as a constituency that has a strong potential to benefit from energy-efficient retrofits. Most LTC facilities operate with packaged HVAC equipment, approximately half of which are over 12 years old, well past the stage of high performance. Lighting, refrigeration, and other equipment are similarly aged and not operating at energy-efficient levels. Barriers against equipment upgrades are twofold. First, facilities are commonly averse to long-term paybacks resulting from large capital expenditures on efficient equipment. Second, facility staff are generally not familiar with implementing energy-efficiency measures, nor their effects on health and safety, and are concerned with the regulatory issues that may accompany such upgrades. IMT's market assessment and experience in two demonstration projects in northern California revealed that HVAC systems, lighting, windows, and control measures are all areas where current performance in this sector is low. Energy-incentive programs provide a cost-effective opportunity to replace older, inefficient equipment. (Retrofit measures will be purchased and installed at the owner's cost.)</p> <p>Our initial project also revealed that there is a valuable opportunity to achieve low-cost energy savings and non-energy benefits in LTC facilities through improved O&M practices. The two retrocommissioning projects previously undertaken in northern California demonstrated an 8 to 14 percent reduction in energy use. While these levels were significant, the cost of a commissioning agent was covered under program funds. This addition to overall expenses reduced the cost-effectiveness of the energy savings. As an alternative to retrocommissioning, IMT proposes a tailored strategy for the LTC sector that will be followed in the six demonstration projects – an energy study that 1) addresses O&M and retrofit opportunities, 2) analyzes the potential for kWh and cost-savings, and 3) recommends a cost-effective strategy for energy reduction. Low-cost O&M measures will make equipment replacement more cost-effective and will promote persistence of energy savings while providing non-energy benefits.</p> <p>IMT will solicit participation through a market assessment of southern California facilities. IMT has a complete mailing list of facilities in SCE and SDG&E service-territories, which will be used to conduct the survey. A brief questionnaire will collect physical and operational building information and assess the suitability of a respondent for involvement in the demonstration projects. We will seek to involve facilities of varying sizes that express interest in acquiring energy-efficient building equipment. In keeping with the goal of this task, IMT will select facilities that best represent their community. These will most likely be average-sized facilities with 75 beds or more. The assessment will also allow IMT to reach out to individual facilities – creating awareness of upcoming project activities, and allow us to target specific needs and concerns of these facilities.</p> <p>Facility administrators reported regulation as a significant barrier to energy efficiency. In fact, LTC facilities are exempt from the bulk of Title24 and fall under the oversight of the Office of Statewide Health Planning & Development (OSHPD). While any incentive or encouragement of energy efficiency is absent from this agency, many actions, including all the measures adopted through the past retrocommissioning projects, do not trigger excessive OSHPD compliance requirements. However, administrators remain daunted by the anticipated bureaucracy associated with any retrofit work. IMT will seek to work closely with local OSHPD inspectors to 1) facilitate the demonstration projects and 2) document any existing regulatory conflicts with energy-efficient upgrades. Recommendations for streamlining measures that encourage improvements in energy performance will be submitted to OSHPD at the close of year one."</p>
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TPI Proposal to CPUC 2002	Proposal to Implement the Mechanical and Electrical Contractor Partner Pilot Program by kW Engineering	<p>"Successful mechanical and controls MECs maintain ongoing relationships with their customers. This relationship typically involves maintenance service agreements and implementing periodic facility improvements. These MECs know the customer's facility, in many cases better than the customer. There is also a level of trust between the customer and the MEC. The vast majority of work provided by these MECs is in response to equipment failure, changes in facility use, and facility expansion. MEC's do not typically offer energy audits for their customers. Energy is a peripheral concern, if it is considered at all. Provided an acceptable rate of return however, many customers would welcome a proposal to implement a package of measures to reduce energy costs if it provided an acceptable rate of return. MECs would welcome the increased revenue from building energy saving projects and/or more comprehensive service agreements. Our targeted market segment represents a huge reservoir of cost-effective EEMs. These EEMs are lying undiscovered and will continue to do so without the intervention. While MECs sometimes have the expertise to identify EEMs, they rarely have the expertise to present a convincing economic justification for the project. Where such expertise exists, it is tainted in the eyes of the customer by the MEC's clear stake in the outcome. The program will uncover EEMs and provide and independent economic justification for their implementation. Lack of consumer information about energy efficiency benefits. The targeted customer facilities have often developed close relationships with MECs because they lack expertise in building systems. These customers also lack knowledge of what EEMs are cost effective in their facility, and typically underestimate the potential savings that can be mined from their facility. While MECs sometimes have the expertise to identify EEMs, they rarely have the expertise to present a convincing economic justification for the project. This program overcomes this barrier by providing site-specific identification and evaluation of EEMs. Higher start-up expense for high-efficiency measures relative to standard-efficiency measures. The primary two cost barriers to the installation of EEMs are the process costs of the audit and project development and the cost of the retrofit equipment itself. The program addresses the first barrier directly and the second indirectly. The goal of the program is to tap the vast reservoir of cost-effective EEMs that have not been implemented because they have never been identified, not because they are too costly. The primary financial barrier to identifying the measures is the cost of an energy audit. Without PGC intervention, the customer or MEC must approve the audit cost on a leap of faith that it will provide benefits. Customers are often unwilling to bear this cost, and MECs are understandably reluctant to absorb such a marketing cost without a guarantee of work. One of the long term goals of the program is to demonstrate that the audit cost is a worthwhile investment for either party. The program provides free audits to the customer. The higher cost of efficient equipment is indirectly addressed by referring customers to other financing and incentive programs such as Express Efficiency and Express SPC. Lack of a viable and competitive set of providers of energy efficiency services in the market.</p> <p>1) It could be argued that the basic program elements, teaming an energy audit with a contractor willing to implement the EEMs, is already available from the ESCO industry. This argument would have merit if the target market were large institutional or chain customers. However, our target facility is smaller than can be cost-effectively marketed by ESCOs. ESCOs require large facilities or a large number of small facilities all with the same owner to absorb the relatively fixed costs of marketing, concluding complicated contracts, financing, and M&V for performance contracts. By using existing MEC relationships, these fixed costs are reduced or eliminated, allowing us to cost-effectively target smaller facilities.2) Most MECs do not have the expertise to use energy savings as a persuasive sales tool, and thus do not aggressively market energy efficiency upgrades. Barriers to the entry of new energy efficiency service providers. MECs may not be seen as objective providers of information about energy efficiency because they have a stake in seeing greater investments in end use equipment. Energy service companies will not enter this market because the facility sizes are too small to merit the relatively fixed costs of marketing, contracting, financing, and M&V for performance contracts.</p> <p>Institutional Organizational Barriers Building operations and maintenance personnel are often not conversant with the economic terms and practices that are used to prioritize and sell capital projects internally. The program will attempt to identify the decision makers in each organization and present the economic justification for recommended projects in the terms with which they are comfortable (e.g. simple payback vs. internal rate of return). We will attempt to include all those with input from the customer's organization in meetings to present the EEMs and identify and overcome barriers to implementation.</p> <p>Priorities of Building Owners and Operator Building owners and facility managers are concerned with the day to day operation of the building and urgent issues such as building security and safety. They typically have little time to research energy efficiency opportunities, or to find companies who can offer these services from an independent, unbiased perspective."</p>
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TPI Proposal to CPUC 2002	Hospitality Lighting Program (the Program) by PECl	<p>"The Hospitality CFL Procurement Program is designed to overcome the barriers listed below by creating awareness and interest on the part of hotel decision makers while gathering information needed for the manufacturing partners to make effective sales presentations and to pursue customers they do not otherwise target.</p> <p>Lack of Available Product – The ENERGY STAR program and recent energy crisis have had a dramatic impact on the availability, quality and affordability of CFLs. However, these effects are seen primarily in the consumer retail sector and are not directly translated to the hospitality sector. The technical and performance requirements for hospitality lighting are more stringent than for the consumer market limiting the applicable product. The rebate available through this program will encourage manufacturers to expand their product lines especially if the prospect of continued sales are increased.</p> <p>Lack of a Competitive Set of Providers – Manufacturer reps report that it is not cost-effective to allocate the time required to build new business or develop convincing materials to alter customer buying habits within this sector. Therefore, lighting purchasing behavior is seldom altered. This program bridges this gap by investing the time to generate the sales leads for the manufacturers, which lead to the natural market competition.</p> <p>Lack of Financing – Hotel and motels will typically purchase thousands of light bulbs at one time. When the per unit cost increases over ten-fold, the financial investment will significantly affect the bottom line budget, which is not based on life-cycle costs. The per unit rebate of \$2.00 will help cover the incremental cost alleviating this financial burden.</p> <p>Lack of Consumer Awareness – Much of the hospitality industry has either no experience or a negative experience with CFLs. Either way, the industry is hesitant to risk occupant satisfaction by changing their lighting installation practices. By working in a strategic manner, using existing sales forces with program follow-up, the hospitality market can be systematically made aware of high-quality energy-efficient CFLs and their financial savings potential.</p> <p>Market Sector Preference – Manufacturers spend their time where they have the best opportunities for the largest purchases. While this is a natural tendency, it further isolates the small business market. In addition, the rural business market is neglected due to the increase in time and cost to of reaching these customers. This program will address this need."</p>
TPI Proposal to CPUC 2002	PECl. Proposal for Delivering Energy Efficiency Services to the Independent Grocery Sector.	<p>"Independent grocers have demonstrated through their lack of action that they need information, technical assistance and financial resources to implement energy-efficiency measures in their stores. This program places an Energy Expert (EE) at the wholesaler "house"- providing the professional consultation and implementation assistance to the independent customers that the chains get from their corporate headquarters. This approach is endorsed by the National Grocers Association, who advocates that retailers and wholesalers must operate more as a "virtual chain" to survive. The program offers rebates to enable independent grocers to afford the initial investment.</p> <p>Lack of Information</p> <p>Independent grocers are not used to thinking about long-term energy efficiency. The pressing concerns of food safety, product life and maintenance get more attention because they are well understood and impact the store's ability to make sales. The EE would have marketing materials to demonstrate how energy efficiency measures can have beneficial effects on product life – for example, how keeping the store humidity lower can save significant energy while improving shelf life.</p> <p>In addition, the Independent grocers have such tight operating budgets that they rarely have the resources to investigate energy savings opportunities. The IGP provides information at no cost to the retailer. It calculates the benefits of improving energy efficiency so that decision makers can precisely determine the number of operating dollars that can be devoted to efficiency improvements. Measures with longer payback periods can be properly evaluated and included in annual property management budgets.</p> <p>Lack of Technical Resources</p> <p>Independent grocers are not always in the position to evaluate the technical expertise of their equipment contractors. Market research in the Pacific Northwest has shown that many contractors lack the training to adequately install and service the more efficient technologies such as floating head pressure control. Other contractors are in the position of knowing that efficient equipment would save energy, but they are unable or unwilling to induce "sticker shock" in their customers, so they continue to provide the "low bid" services that their customers have come to expect. The IGP addresses these issues in two ways. It provides for contractor training, to ensure a pool of contractors who can install and maintain this efficient equipment. It also provides a link between the contractors and the grocers – providing grocers with a list of qualified local contractors and providing contractors with a list of grocers who are interested in the possibility of efficiency upgrades.</p> <p>Lack of Financial Resources</p> <p>The large capital investment required for equipment purchases is a barrier to adopting new technologies. The IGP provides rebates for targeted equipment. In addition, the program deploys a cooperative marketing fund to reward manufacturers for promote targeted equipment and supporting the program message in their marketing to equipment contractors and independent grocers. PECl has managed a similar Cooperative Advertising Fund for our ENERGY STAR® Home Products Program. Manufacturers can choose to promote their equipment through targeted rebates, salesperson incentives, financing, or other mechanisms, many of which help to lower the financial barrier to purchasing efficient equipment."</p>

TPI Proposal to CPUC 2002	Proposal for The Energy Savers Program, by RLW Analytics, Inc. with the Small Business Energy Alliance	"-small business owners are aware of the state's ongoing energy crisis, many of them are willing to do no-cost and low-cost measures, but unwilling to pay for more expensive measures ~small businesses may be renters (split incentives) ~do not perceive energy marketing offers from energy service companies as equally credible as the from the utility ~just because the utility provides rebates doesn't mean small business owners are motivated to take advantage of them ~small business owners typically are engaged more than full-time in running their business (no time for energy research)"
TPI Proposal to CPUC 2002	Sagisaw Partners, LLC. Proposal to Develop and Implement Local Crosscutting Marketing Outreach Program	<p>"The program will remove the language barrier that exists for Spanish, Chinese, and Vietnamese speaking residential and small business customers and will increase their awareness of and participation in local energy efficiency programs. This effort should ultimately help the target community reduce their energy bills and also help the state of California avoid rolling outages. The majority of customers in the PG&E service territory possess some level of awareness regarding the State of California's efforts to reduce energy consumption by means of conservation. However, a great number of the customers that do not speak English are somewhat isolated from this awareness and have at best a "sketchy" level of understanding of the existing programs designed to promote conservation. Compounding this issue, many of these non-English speakers reside in either remote rural areas or large multi dwelling housing complexes –where information does not "trickle down" very easily.</p> <p>Language Many of the residents that do not speak English are somewhat isolated from "mainstream society" and in many cases very reticent when it comes to requesting information from government officials or large established corporations. Even though PG&E makes a concerted effort to reach out to some of these communities (e.g., trade shows, County Fairs, etc), it still falls short of reaching the majority of this targeted segment. When these customers contact PG&E, via their general 800 call center number, the agents are focused on resolving the customer's current issue and handling as many calls as possible – and not promoting "energy efficiency" goals. PG&E has a specific call center (the Smarter Energy Line or SEL), staffed with 30-40 agents specifically for energy efficiency programs – however, none of this resource is specifically charged with providing bi-lingual services. Of the 600,000 annual callers to PG&E's SEL, the overwhelming majority (over 80%) arrives there as a result of marketing efforts and outreach programs; less than 20% of the callers are referrals from the general call center. And those callers that speak languages other than English are assisted by leveraging AT&T language services – which unfortunately is at best a cumbersome solution for both the customer and the utility. Average call length time on an AT&T-assisted call climbs from the normal 3.75 minutes to well above 6 minutes, while also increasing the cost of the call by two-threefold. The end result is that non-English speakers rarely take advantage of the SEL solution (as most outreach is done in English), and those that do request assistance are subjected to a grueling experience that is expensive for both the customer (in terms of time invested) and rate payers (in terms of the cost to deliver the solution).</p> <p>Geography Although the primary focus of this campaign is "non-English" speaking customers, many of these residents reside in remote rural areas – or large multiple unit dwellings. This program will overcome these barriers by tightly focusing on this market niche - and communicating in languages that are both understandable and actionable by this sub-segment of the California residential and small business market segments."</p>
TPI Proposal to CPUC 2002	Energy Efficiency Proposal Commercial, Industrial, & Institutional High-Efficiency Clothes Washer Voucher Incentive Program San Diego County Water Authority	<p>"1.2 Market Barriers The following items are most often expressed as HEW installation obstacles: ! Cost. ! Mistrust of new technology. ! Repair preference versus replacement. ! In some cases, difficulty in obtaining equipment. ! At this time, discontinued marketing budget and limited funding."</p>

TPI Proposal to CPUC 2002	Energy Efficiency Program for Small and Medium Size Retail Food Stores and Refrigerated Storages January 14, 2002 Submitted by VaCom Technologies	<p>There are several market barriers that will be addressed, including</p> <ul style="list-style-type: none"> •Small size: The relatively small size of the target customers' facilities often result in longer paybacks due to fixed costs of project development, analysis, etc. This challenge will be address with a pre-defined systematic, program-based approach that reduced the fixed costs for each location. •Complexity and equipment age: Many of these customers have quite old equipment and systems that are made complex by evolutionary changes over time, requiring substantial technical analysis and relatively high investment. Education concerning technical potential and accurate technical/economic project development will be used to reducing uncertainty and thereby encourage investment. •Lack of capital: Many small businesses lack the capital to invest in efficiency, even if the payback is attractive. This will be addressed with solid savings estimates to justify owner's commitment, incorporate financing contacts from trade allies and financial sources that are adept at funding small energy efficiency projects. •Poor experience with previous devices: Small chains and independents have been a favorite target of many promotions ranging from "snake oil" to legitimate but poorly implemented technologies. Accordingly, many owners are hesitant to consider additional investment. This will be addressed through education and by utilizing solid data collection on early installations to showcase the results. Also, by showing performance on real time basis using EnergyDashboard, owners can be involved in verifying that their facility does improve in efficiency."
TPI Proposal to CPUC 2002	LIGHTING RETROFITS FOR SMALL BUSINESSES IN STOCKTON ENTERPRISE ZONES Energy Efficiency Proposal. American Lighting & Distribution.	<p>"? Cash flow - These business owners face cash flow challenges each month and are typically not able to afford a lighting upgrade – even if it offers a fast return on investment.</p> <p>? Product Awareness – These business owners are too busy running their businesses to be considered experts on lighting efficiency. These business owners are not aware of the benefits and cost savings that can be derived from energy efficient lighting measures and practices.</p> <p>? Skepticism – These business owners have been duped by contractors in the past, and are very skeptical of programs that sound too good to be true.</p> <p>? Unfamiliarity – These business owners have frequently never even heard of the rebate or incentive programs that are available.</p> <p>? Ownership – The business owner that pays the Public Goods Charge is not usually the owner of the building. The building owner seldom pays the tenant's cost of power and the business owner has a hard time rationalizing using working capital to pay for upgrades that don't directly benefit his bottom-line.</p> <p>? Overlooked – Many of these businesses are so small that they have never been marketed to or solicited by lighting contractors. Most of these jobs are so small that many contractors will not perform the work and fill out the rebate paperwork.</p> <p>? Economically Distressed Areas – These businesses are located in economically distressed areas and face a unique set of business challenges inherent with the neighborhood or area of the state where they are located."</p>
TPI Proposal to CPUC 2002	AfterImage + Space THE LIGHTING EXCHANGE: On-line training and outreach for lighting professionals in Northern California	<p>"? The uses of energy-efficient technologies are sometimes not used due to concerns over Lamp/Ballast compatibility: This issue will be addressed in the Guidance area, and the Lamp/Ballast Databases are specifically geared to provide rapid evaluation of this concern.</p> <p>? Consumers are not informed of differences of lamp types and do not understand how to buy them: The Lamp Database will provide picture, size and specifications that allow for rapid identification. Also, the links through the manufacturers databases will allow consumers to find more specific information.</p> <p>? Residential customers, contractors, and retailers are not well-trained in lighting: The lighting exchange will provide lighting information for all Northern California customers, and will have a residential focus for products that have been targeted by the state (CFL's, outdoor lighting, fluorescent lamps, etc.).</p> <p>? Residential contractors and customers have a bias against fluorescent lighting: The Lighting Exchange will provide better information for residential customers on the proper selection of lamps, ballasts, and fixtures to improve the color and noise problems that have been experienced in the past. We envision cooperative efforts with the Flex Your Power, Energy Hotline, and other advertising and outreach programs to target the residential market sector.</p> <p>? Lighting professionals do not always choose the most energy-efficient technologies due to lack of time to research technologies: The Lighting Exchange provides for design assistance and tools for the lighting professional, including access to the experts in all fields through the Dialog portion of the site. This forum approach enhances the ability of the design professional to gain knowledge through an expedient and reliable resource.</p> <p>? It has been acknowledged that the key to energy efficiency is a sophisticated client – the market barrier is reaching customers to advance their knowledge in energy-efficient products: The Lighting Exchange, through the various mechanisms within the program, provides both push- and pull-drivers to rapidly expand the information resource throughout Northern California, and driving customers and lighting professionals alike toward investigating and using high-efficiency products."</p>

TPI Proposal to CPUC 2002	Small Commercial Local Cambodian Community Residential & Small Commercial Energy Efficiency Information & Audit Program by Far West	<p>"Lack of Consumer Information – The most significant market barrier addressed by this program is the lack of consumer information about energy efficiency options resulting primarily from an inability to understand English only publications. The program provides participating customers with very credible, unbiased information about energy savings opportunities in their primary language. Even without a language barrier, a review of local utility program filings shows that residential customers have very little idea of the level of energy cost savings possible from various activities that they might undertake. Residential customers can implement many energy-saving practices and low cost energy efficiency measure purchases once the information barrier is overcome. For higher-cost products and services, especially those products and services that are often prevalent in the small commercial market sector, customers need information from an unbiased source about the bill savings they can expect to help them to be willing to undertake the high first cost of such purchases. In the Cambodian community, it is almost imperative that the information be presented in Khmer and provided by a local entity that they feel can be trusted.</p> <p>Split Incentives – The Cambodian population in Long Beach California is relatively new with most immigrations occurring in the last fifteen years. As a result, a significant percentage of the Cambodian population are renters. By informing them of the lower operating costs of efficient equipment and cost savings associated with efficient operating practices, inroads will be made that mitigate the effect of split incentives. This will be accomplished by creating a pool of change agents in the pool of renters that become advocates for energy efficiency. These advocates will then demand or encourage property owners to incorporate and install more energy efficient equipment in the properties that are placed in the pool of available housing.</p> <p>Asymmetric Information – Providing information on energy efficiency products and practices in Khmer would now place this group in a position to more effectively evaluate the veracity of product vendors claims. This consumer group has been excluded from basic information that has previously been supplied to other groups and vendors. Supplying this group of consumers with product knowledge will level the playing field if product vendors attempt to promote less efficient products and services."</p>
TPI Proposal to CPUC 2002	SMART TECHNOLOGY EFFICIENCY PROGRAM for MEDIUM NON-RESIDENTIAL & SMALL NON-RESIDENTIAL MARKETS Quality Conservation Services, Inc.	<p>"Market Barriers This Smart Technology Efficiency Program (STEP) has been designed to overcome the typical financial and experience barriers associated with property managers' lack of exposure to Smart Technologies. Again, these property owners typically lack the overall resources required to effectively qualify the appropriate technology and the right contractor to perform the work. In addition to these financial and informational barriers, the increase in utility costs over the last 18 months and the sharply reduced occupancy levels in California hotels and motels after September 11, 2001, have had devastating effects on these small owners. Helping these smaller motel / hotel owners reduce their energy bills will help to ensure their survival as small businesses in California. Hotels and motels face other unique barriers to achieving energy efficiency. Similar to master-metered apartments, the occupants of hotels and motels have no direct responsibility for the amount of energy they consume during their stays. Leaving the lights on and the heat or air conditioning running all of the time does not increase the occupant's bill at the end of the stay; nor does cranking up the hot tub or spa and failing to turn it back down after leaving the soaking area; nor does taking the world's longest hot shower. Unlike an apartment dweller, however, a hotel or motel guest using large amounts of energy is not subject to attempts by the owner to counsel for moderation in the use of energy. By the time the behavior is noted, the guest is often gone. And it is the rare hotel or motel owner who wishes to embarrass guests by commenting to them about their energy usage. Thus, hotels and motels offer an ideal environment for the installation of HVAC and water heating controllers and other measures that automatically cause guests to use energy in moderation and to avoid wasting it. And, our experience has shown that more than just about any other type of business, small hotels and motels are often owned by persons whose native language is not English. The first language of many is Spanish, while a substantial portion of the owners and operators are native speakers of Hindi, Urdu, or other languages of South Asia. We will provide outreach to these owners, using whatever languages are necessary."</p>

TPI Proposal to CPUC 2002	PROPOSAL OF THE CALIFORNIA INSTITUTE FOR ENERGY EFFICIENCY Cooling Residential and Small Commercial Buildings in California's Hot Dry Climates: Market Connections for Promising PIER Emerging HVAC Technologies	<p>"These emerging technologies are not likely to achieve broad scale adoption by residential and small commercial customers and expanded marketing and deployment efforts by HVAC contractors and other market players until the following market barriers are addressed:</p> <ul style="list-style-type: none"> • Performance Uncertainties <p>Many customers, contractors and other market players (e.g. architects, engineers) are uncertain—and may be skeptical—about performance projections for many emerging technologies. Many of these market players do not readily adopt new technologies with a limited track record, especially if their first costs are higher than existing and proven equipment and methods. They may be uncertain about energy saving and peak electricity demand reduction performance and reliability.</p> <p>Information about the actual performance and other relevant attributes of emerging technologies in typical customer situations can show that energy savings and other benefits can be realized in practice. Once these market players become convinced of the viability and benefits of an emerging technology and are able to quantify and predict these benefits in typical situations, they are more likely to incorporate them into their projects.</p> <ul style="list-style-type: none"> • Higher Start-up Expense for High-Efficiency Measures <p>Many HVAC contractors are small- or medium-sized businesses that typically do not have the resources to translate R&D results into integrated system designs or to develop equipment and installation specifications and consumer-oriented marketing information. Because of the limited market size, emerging technologies are often higher in cost during the initial stages of market development. HVAC contractors and other market players are more likely to get involved in developing the capability to implement and market an emerging technology if the market potential and customer interest have been demonstrated, and if technology performance, equipment and system specifications, and other information are more readily available.</p> <ul style="list-style-type: none"> • Lack of Consumer Information About Energy Efficiency Benefits <p>When seeking solutions to energy problems or to meet needs, customers may find it difficult to evaluate the claims of HVAC contractors, manufacturers, and other market players. If customers have access to useful and unbiased information about the actual performance and other relevant attributes, they are much better equipped to in deal with market players.</p> <ul style="list-style-type: none"> • Split Incentives <p>In some end-use applications of an emerging technology, the decision-making criteria of buyers may not be aligned with those who would benefit from the adoption of the technology. For example, a building owner who leases commercial space might focus on first cost and not purchase a more expensive but more energy-efficient HVAC system. As a result, a building tenant will pay higher utility bills and possibly experience lower quality end-use energy services (e.g., comfort) over the longer term. Providing information about the performance and other attributes of an emerging technology to both tenants and owners may help to reduce this barrier. It may also be a desirable strategy to use PGC energy efficiency incentives to pay contractors to install an emerging technology if the building owner is reluctant to make the investment and the societal benefits are significant."</p>
TPI Proposal to CPUC 2002	San Francisco Community Power Cooperative	<p>"In addition to addressing broad barriers to participation in energy efficiency programs (e.g., income and education), co-op programs will also help to penetrate other barriers. For example, "split incentives" – between owners/landlords and tenants – will be addressed by providing incentives for portable energy efficiency investments, such as light bulbs and refrigerators. In this way should an owner not want to invest in these devices, a tenant will still have an incentive to do so. In addition, the supply of cost-effective energy efficiency service providers will be increased through a training and skills development program, as well as the development of a consumers' guide to service providers.</p> <p>Another barrier to energy efficiency programs' successful penetration into low income and demographically diverse communities is a lack of trust on behalf of area residents in the entities offering the programs and the sometimes-complicated administrative procedures that need to be followed to obtain program benefits. The co-op structure addresses both of these factors. Trust is garnered by working with local groups who have strong existing ties within the community. Likewise, since the co-op is based on an ownership model, members are provided with greater assurance that the co-op is working on their behalf, not for its own profit. Administrative program barriers are negotiated through "case study" assistance by co-op staff. That is, co-op members are provided with staff support in obtaining access to programs for which they are eligible, including consultations about available programs, facilitation with application submission, and, if necessary, follow-up contact with the administrating organization to insure that the process is proceeding expeditiously.</p> <p>The co-op provides the Commission with a way of developing a sustainable energy efficiency infrastructure that can provide an effective long-term method of managing residential, small business and commercial energy use."</p>