

**2002 STATEWIDE NONRESIDENTIAL
CROSS-PROGRAM EVALUATION**

Study ID# SW066

September 27, 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**

**2002 STATEWIDE NONRESIDENTIAL
CROSS-PROGRAM EVALUATION**

Study ID# SW066

September 27, 2004

Measurement and Evaluation
Customer Energy Management Policy, Planning &
Support Section
Pacific Gas and Electric Company
San Francisco, California

Disclaimer of Warranties and Limitation of Liabilities

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.

Furthermore, the results of the study may be applicable only to the unique geographic, meteorological, cultural, and social circumstances existing within PG&E's service area during the time frame of the study. PG&E and its employees expressly disclaim any responsibility or liability for any use of the report or any information, method, process, results or similar item contained in the report for any circumstances other than the unique circumstances existing in PG&E's service area and any other circumstances described within the parameters of the study.

All inquiries should be directed to:

Jay Luo
Revenue Requirements
Pacific Gas and Electric Company
P. O. Box 770000, Mail Code B9A
San Francisco, CA 94177

Copyright © 2004 Pacific Gas and Electric Company. All rights reserved.

Reproduction or distribution of the whole, or any part of the contents of, this document without written permission of PG&E is prohibited. The document was prepared by PG&E for the exclusive use of its employees and its contractors. Neither PG&E nor any of its employees makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any data, information, method, product or process disclosed in this document, or represents that its use will not infringe any privately-owned rights, including but not limited to, patents, trademarks or copyrights.



**2002 STATEWIDE NONRESIDENTIAL CROSS-PROGRAM
EVALUATION**

FINAL

Prepared for

*Rafael Friedmann
Pacific Gas & Electric
245 Market Street
San Francisco, CA 94105*

Prepared by

**QUANTUM CONSULTING INC.
2001 Addison Street, Suite 300
Berkeley, CA 94704**

P1973-151

September 27, 2004

TABLE OF CONTENTS

Section		Page
1	PROGRAM DESCRIPTIONS	1
2	PROGRAM THEORY	2
2.1	Barriers to Energy Efficiency Measure Adoption and Program Roles in Overcoming Them	3
3	PROGRAM PARTICIPATION AND AWARENESS	6
4	EVIDENCE OF PROGRAM LINKAGE	12
5	BENEFITS OF PROGRAM LINKAGE	16
5.1	Benefits of Audit Participation for Express Participants	17
5.2	Audit/SPC Cross Program Participation Benefits	21
6	KEY FINDINGS AND RECOMMENDATIONS	23
6.1	Key Findings	23
6.2	Recommendations	23

2002 STATEWIDE NONRESIDENTIAL CROSS-PROGRAM EVALUATION

This California cross program evaluation report is designed to compare, contrast, and characterize three key statewide nonresidential programs as a group: the Nonresidential Audit (Audit) program, the Express Efficiency program (Express) and the Nonresidential Standard Performance Contracting program (SPC.) This report reveals the ways in which the programs are integrated, as well as highlighting the relative successes with different implementation strategies. Each of the three programs has an associated program year 2002 Evaluation Report where significant detail regarding the performance of these programs can be found¹.

The report begins with a description of the three programs in focus. The next section is a discussion of the program theory and role of each program in addressing customers' barriers to energy efficiency actions. The third section characterizes each of the three sets of program participants and discusses the unique ways that customers become aware of the programs and are recruited into the programs. The fourth section explores evidence of program linkages, concentrating on trends in cross-program participation and levels of program awareness. This is followed by a detailed investigation of the benefits of program linkages and the market effects of 'cross-program' participation. The final section presents key findings and recommendations for optimally integrating the programs.

1. PROGRAM DESCRIPTIONS

All three programs are funded by PGC (Public Goods Charge) funds and administered under the auspices of the California Public Utilities Commission (CPUC.) All three are offered in a nearly uniform format by each of four California Investor Owned Utilities (IOUs), Pacific Gas and Electric (PG&E), Southern California Edison (SCE), the Southern California Gas Company (SCG) and San Diego Gas and Electric (SDG&E), with the exception that SPC is not offered by SCG. The Audit and Express programs also address the CPUC targets regarding equitable program access to the hard-to-reach (HTR²) business sector.

The Audit program provides energy efficiency information and energy conservation recommendations that are tailored (to the degree possible) to each participating customer. Five distinct audits are offered to customers: Mail, CD-Rom, Online, Phone and On-site. Customer-specific information is gathered to make individual energy conservation recommendations for each customer, culminating in the preparation of a tailored report (or list of recommendations) for each participant. With respect to the relative cost to implement each delivery channel, and the expected downstream impacts for each audit, the lower cost delivery channels, such as Mail, CD-ROM, Online and Phone, are more appropriate for smaller customers and On-site audits are

¹ http://www.calmac.org/publications/Statewide_Express_Efficiency_Report_Final.pdf
http://www.calmac.org/publications/2002_Statewide_Nonres_Audit_Report.pdf
http://www.calmac.org/publications/2002_NSPC_Final_Report.pdf

² The CPUC defines hard-to-reach customers as small (less than 20 kW or less than 10 employees), located in rural areas, renters, and those for whom English is a second language

more appropriate for larger customers. On-site audits are most appropriate for larger customers because this ensures greater program cost-effectiveness and this is the only delivery channel offering complex custom measure recommendations. Furthermore, the lower cost audit types are designed to provide prescriptive measure recommendations only, making them good “feeder” to the Express Efficiency program.

In 2002 Express Efficiency was a prescriptive retrofit program designed for customers with peak demand less than 500kW. The Express Efficiency program offers financial incentives (rebates) to qualifying customers for installing selected retrofit energy-efficient technologies. Smaller customers qualifying for Express Efficiency are better suited to the lower cost audits, which provide comprehensive prescriptive recommendations.

SPC is geared toward larger customers. Under the 2002 SPC Program, the program administrators offer fixed-price incentives to project sponsors for measured or calculated kWh energy savings achieved by the installation of energy efficiency measures. The fixed price per kWh, performance measurement protocols, payment terms, and other operating rules of the program are specified in a standard contract.

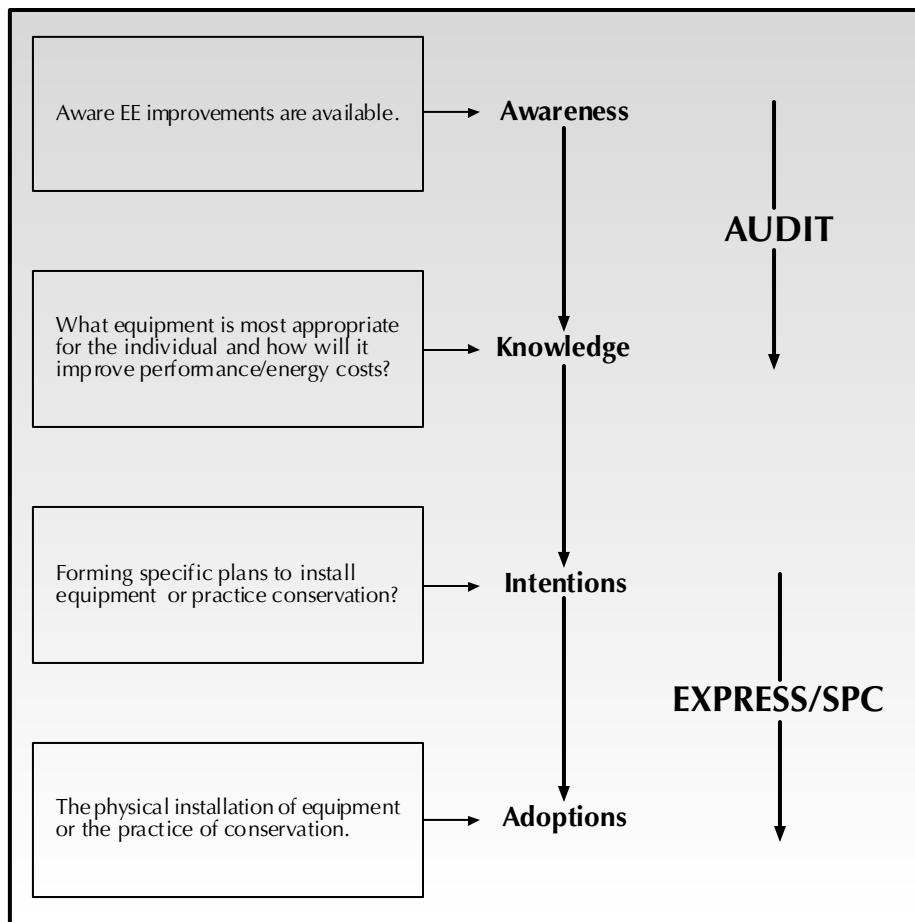
To qualify for SPC, a project must produce a predetermined level of energy savings; however, two or more projects may be aggregated to meet this requirement. The program is open to almost any equipment replacement or retrofit project for which the savings can be measured and verified with a useful life of 3 years or more.

2. PROGRAM THEORY

This section reviews the theoretical basis for each of the programs and illustrates how they work together to address customers' barriers to energy efficiency uptake.

Exhibit 1 below presents the four major barriers to customer energy efficiency measure adoption. These barriers are referred to throughout this report in discussions of the roles and effects of the three statewide programs on customer EE behavior. The Exhibit also illustrates the roles of the programs in assisting customers through these barriers. The barriers to energy efficiency measure adoption and roles of the programs in overcoming those barriers are discussed in greater detail in the text following the Exhibit.

Exhibit 1
Customer Barriers to Energy Efficiency Measure Adoption



2.1 Barriers to Energy Efficiency Measure Adoption and Program Roles in Overcoming Them

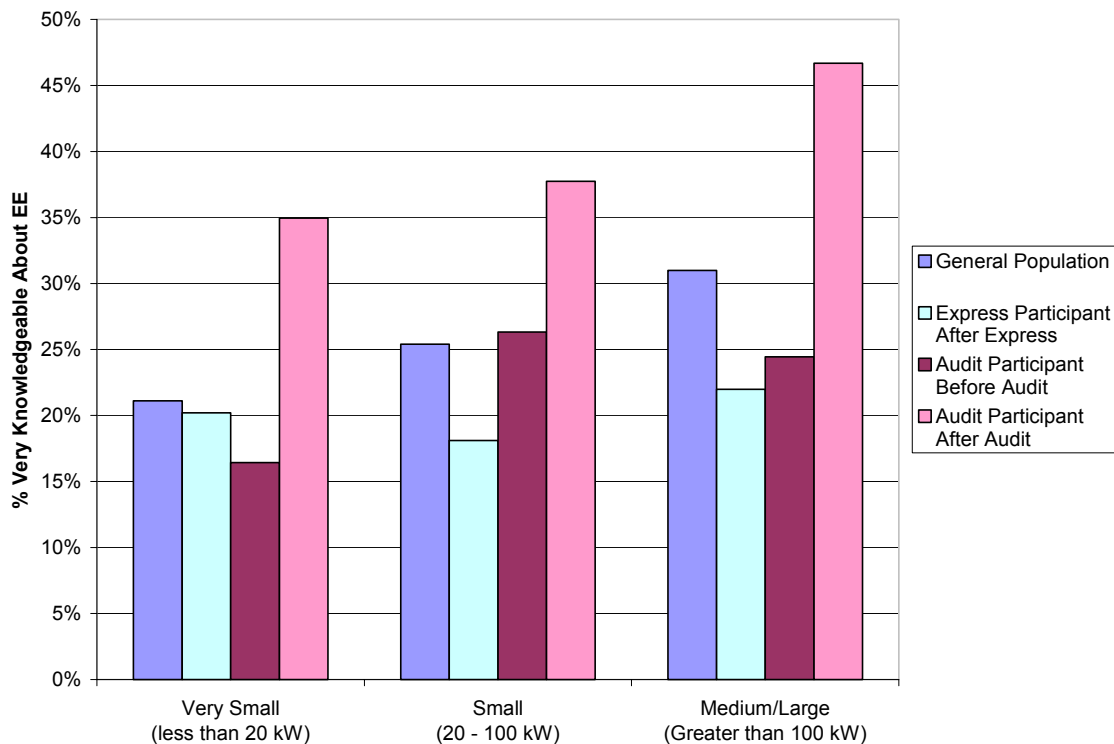
Awareness is the first barrier to customer adoption of energy efficient measures. The Audit program directly addresses this barrier by providing energy efficiency information and

recommendations, including estimates of energy savings. The program promotes awareness through both program marketing and audit report content.

The Express program also promotes awareness, although to a lesser degree. Contractors often approach customers and offer to install Express rebated measures, delivering awareness along with the measure. However, this approach is less effective than the Audit program approach. Exhibit 2 below demonstrates the Audit program’s superior performance as an awareness-building tool.

Another aspect of awareness is ‘knowledge’— knowledge of energy efficient equipment and opportunities. Exhibit 2 below illustrates the success of the Audit program in improving customer knowledge of energy efficiency measures. The Exhibit compares self-reported energy efficiency knowledge between the general population, Audit and Express participants. Survey respondents were asked to rate their energy efficiency knowledge on a scale from 1 to 10. Those who ranked themselves an 8, 9 or 10 are shown here as being very knowledgeable about energy efficiency. Audit participants were asked to rate their knowledge both before and after program participation. The results show that the general population is comparable to Express participants after their participation experience and the Audit participants *prior* to participating in the Audit. Audit participants’ knowledge after participating in this program is well above the other segments, illustrating the program success in this area.

Exhibit 2
Self-Reported Knowledge of Energy Efficiency
Audit Participants versus the General Population and Express Participants



Among the general population, very small and small customers are much less knowledgeable about energy efficiency than are medium and large customers. The Audit program successfully increases knowledge of smaller customer to a level greater than the medium and large customers in the general population. Thus, the Audit is successful in reaching those most in need of energy efficiency knowledge. This result supports the ongoing program objective of delivering information services to hard-to-reach customers.

Measure **Acceptability** refers to the degree of consumer approval and willingness to embrace new energy efficient equipment. Ultimately 'acceptability' indicates the ability of the technology to 'take hold' in the market. The Audit program promotes acceptability by recommending highly appropriate technologies to a customer, and by stating the benefits of the equipment. The Audit program also reinforces equipment acceptability by providing a utility-backed endorsement of energy efficient technologies. The Express and SPC programs also promote measure acceptability through marketing of the program technologies, and by creating greater familiarity with EE technologies in both the contractor and customer populations and willingness to offset some or all of the incremental costs associated with adoption of such technologies.

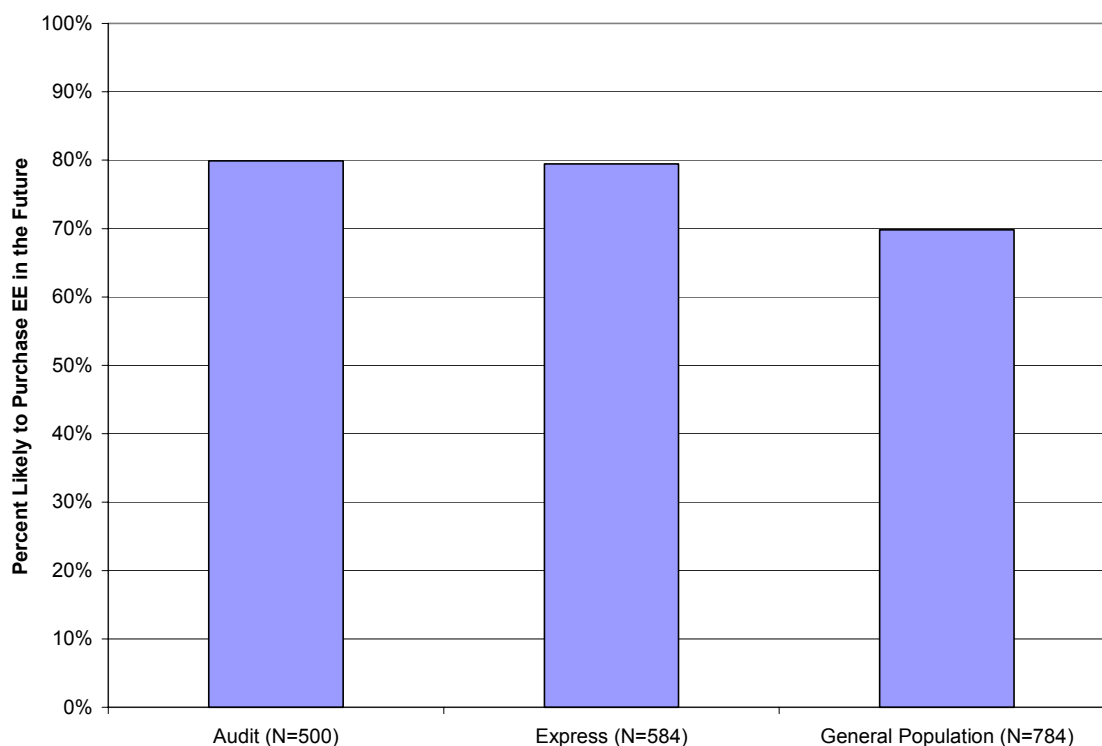
Affordability refers to the ability to pay for the energy efficient measures. This is directly addressed by the Express and SPC programs through financial assistance with purchases of energy efficient measures. Affordability is a barrier also addressed by the Audit program through the provision of accurate cost and benefit information. That is, the Audit program improves the accuracy of the customer's perceptions of affordability by showing that spending money in identified areas for the specified measures can be a money and energy-saving opportunity.

Equipment **Availability** is a necessary condition for equipment adoption. Thus, this barrier is essential to overcome. The 'availability' barrier is addressed by the Express and SPC programs through their promotion of customer demand for energy efficient equipment. The increased demand stimulates supply and works to improve availability for all customers. This effect also can improve affordability because producing equipment in larger quantities can reduce the unit cost.

Reducing the barriers to energy efficient measure adoption results in more than simply a single occurrence of a measure adoption. The programs also inspire **Sustainable** energy efficient behavior going forward. The Audit program provides customers with the information they need to carry forward energy efficient practices and equipment choices. The Express and SPC programs more often than not provide positive experiences with high efficiency equipment that can influence future choices.

Exhibit 3 below shows the percent of the Audit and Express participating populations and the general population that are very likely to purchase energy efficient equipment in the future. Audit and Express participants are very similar, with about 80 percent of both populations reporting a very high likelihood of purchase. The general population is measurably lower at 70 percent. SPC participants were asked if they plan to make additional energy efficient investments in the next year. Seventy-five percent indicate that they do have such a plan, and one-third indicate the plans were a result of their SPC participation.

Exhibit 3
Sustainable Program Market Effects
Participants' Likelihood of Purchasing High Efficiency Equipment in the Future



3. PROGRAM PARTICIPATION AND AWARENESS

This section characterizes and compares participant populations in each program. First the size distribution for each program is presented. This is followed by a discussion of the marketing mechanisms that inform and draw customers into each program. These sources of program awareness are important factors in understanding the implications of different program designs and the effectiveness of various tools that draw customers into each of the three programs.

Exhibit 4 below shows the size distribution of 2002 Audit and Express participant populations. The first thing to note is that the Audit population is mostly of unknown size (63 percent.) The missing size values are primarily due to problems in tracking online Audit participants, but also

due to the early stages of development in the audit statewide program and the need for updated tracking systems. These issues are discussed in more detail in the 2002 Audit Program Evaluation report.

The first and clearest distinction across the programs when considering participating customer size is that Express and SPC have very distinct populations of subscribers, consistent with their program designs. Among the 2002 program year participating sites of known size, SPC participants are 90 percent medium (200 – 500 kW) and large (500+ kW), while Express are just 17 percent medium and large.

As expected the Express program had fewer participants in 2002 than the Audit program, 8,400 versus 27,225, and SPC had by far the fewest, with 446.

Exhibit 4
Business Size Comparison of PY 2002 Express, Audit and SPC Participant Populations

Utility	Size	Express Program			Audit Program			SPC Program		
		Express Sites	Percent of Express Program	Percent of Express Known Size	Audit Sites	Percent of Audit Program	Percent of Audit Known Size	SPC Sites	Percent of SPC Program	Percent of SPC Known Size
PG&E										
	Large	122	1.6%	1.6%	36	0.1%	0.4%	110	24.7%	31.6%
	Medium	559	6.5%	7.2%	291	1.1%	2.9%	16	3.6%	4.6%
	Small	998	10.9%	12.9%	1,049	3.9%	10.4%	7	1.6%	2.0%
	Very Small	1,879	21.4%	24.3%	3,659	13.4%	36.3%	6	1.3%	1.7%
	Unknown	2	0.7%		1,277	4.7%		38	8.5%	
	TOTAL	3,560	40.7%	46.0%	6,312	23.2%	49.9%	183	41.0%	39.9%
SCE										
	Large	4	0.0%	0.1%	454	1.7%	4.5%	94	21.1%	27.0%
	Medium	352	5.0%	4.6%	398	1.5%	3.9%	71	15.9%	20.4%
	Small	1,190	14.6%	15.4%	358	1.3%	3.5%	3	0.7%	0.9%
	Very Small	1,520	18.5%	19.7%	1,317	4.8%	13.1%	14	3.1%	4.0%
	Unknown	654	8.2%		7,302	26.8%		39	8.7%	
	TOTAL	3,720	46.3%	39.7%	9,829	36.1%	25.0%	221	49.6%	52.3%
SoCalGas										
	Large	17	0.2%	0.2%	9	0.0%	0.1%	-	-	-
	Medium	96	1.0%	1.2%	410	1.5%	4.1%			
	Small	200	2.2%	2.6%	412	1.5%	4.1%			
	Very Small	116	1.3%	1.5%	1,351	5.0%	13.4%			
	Unknown	9	0.1%		4,942	18.2%				
	TOTAL	438	4.8%	5.6%	7,124	26.2%	21.6%	-	-	-
SDG&E										
	Large	2	0.0%	0.0%	1	0.0%	0.0%	19	4.3%	5.5%
	Medium	152	1.7%	2.0%	18	0.1%	0.2%	4	0.9%	1.1%
	Small	231	2.6%	3.0%	67	0.2%	0.7%	3	0.7%	0.9%
	Very Small	291	3.1%	3.8%	258	0.9%	2.6%	1	0.2%	0.3%
	Unknown	6	0.8%		3,616	13.3%		15	3.4%	
	TOTAL	682	8.2%	8.7%	3,960	14.5%	3.4%	42	9.4%	7.8%
STATEWIDE										
	Large	145	1.8%	1.9%	500	1.8%	5.0%	223	50.0%	64.1%
	Medium	1,159	14.3%	15.0%	1,117	4.1%	11.1%	91	20.4%	26.1%
	Small	2,619	30.2%	33.9%	1,886	6.9%	18.7%	13	2.9%	3.7%
	Very Small	3,806	44.3%	49.2%	6,585	24.2%	65.3%	21	4.7%	6.0%
	Unknown	671	9.8%		17,137	62.9%		92	20.6%	
	TOTAL	8,400	100.0%	100.0%	27,225	100.0%	100.0%	446	100%	100.0%

Program Sources of Awareness

Another important attribute of the programs is the way participants are drawn from the population into the program. Each program has a unique set of tools that are most effective in informing customers of available programs and encouraging them to participate. This section explores the sources of Audit, Express and SPC program awareness. Comparisons are drawn between sources of awareness in the participant population and sources of awareness in the general population, in order to show how different tools are working to raise general awareness and also to attract participation. The following discussion of Audit and Express sources of awareness is segmented by customer size. Small and very small customers take distinct paths to participation, starting with the ways in which they become aware.

Audit and Express program sources of awareness among small and very small customers are shown in Exhibit 5 below. The Exhibit shows both participant and general population sources of awareness. A comparison of the participant and general population sources of awareness not only illustrates the primary sources of information, but also shows which sources are effective in motivating customers to participate. Effectiveness is reflected in the difference between the percent of the general population and the percent of participants that learned about the program through a particular channel. The larger the percent of participants informed by a particular source *relative* to the percent of the general population informed by that source, the more effective that source is in getting people to participate.

For both the Express and Audit programs, direct mail efforts are responsible for most of the program awareness in the general population. However, direct mail has very different levels of effectiveness in the two programs. Direct mail is successful in motivating people to participate in the Audit program, but much less so in Express.

Utility representatives are responsible for about one-fifth of program awareness in the general population, and are effective in recruiting participants in both programs. They appear to be more effective in recruiting Audit participants than Express. However, this is likely explained by a component of the Audit program that involved utility representatives going door-to-door offering on-site audits. This was a highly effective form of recruitment, albeit labor intensive. This effort boosted the portion of participants informed of the program by a utility representative.

The last important point to make about Exhibit 5 relates to the role of contractors in the Express program. Contractors and other third party service providers are the greatest draw for smaller customers into the program. Interestingly, contractors are a minimal source of awareness among the general population, indicating that they are not talking to many customers, but are very effective in marketing to the customers when they do contact them. Contractors are not particularly effective in recruiting Audit participants, as evidenced by the small percentage of Audit participants informed of the program by a contractor.

Exhibit 5
Sources of Express and Audit Program Awareness for Small and Very Small Customers
General Population versus Participant Population

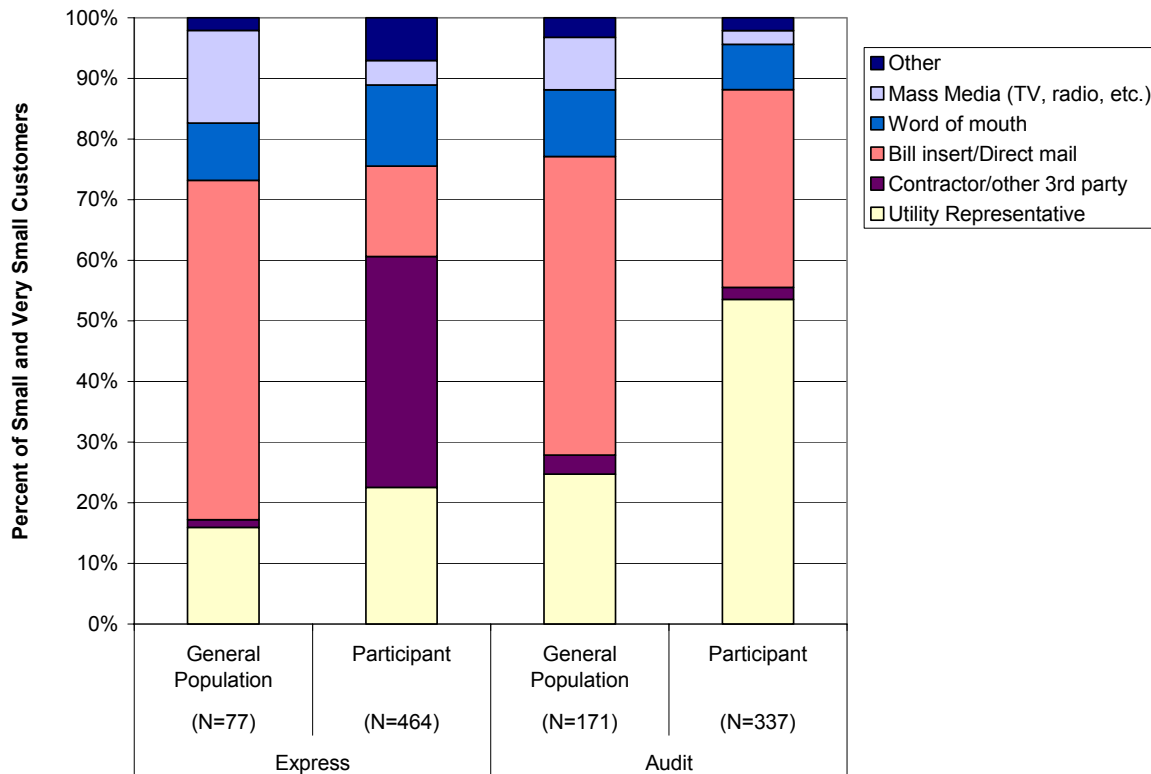


Exhibit 6 below shows the sources of Express and Audit program awareness among medium and large customers, and compares the general population with the participating populations. Utility representatives are a significant source of awareness amongst medium and large participants in both programs. Contractors are also a significant source among Express participants, but less so among Audit participants.

A comparison of the general population to the participant sources of awareness reveals the general population is more likely to have become aware of the programs through bill inserts and mass media than the participant populations.

A comparison of the smaller company sources of awareness (Exhibit 5) shown previously, to the larger company sources shown below (Exhibit 6) reveals that larger companies are much less likely to become aware through mass media and much more likely to become aware through utility representatives and contractors. This is due to the greater frequency of contact between larger customers and utility representatives, while smaller customers rely to a greater extent on mass media. This is particularly evident in the general population.

Exhibit 6
Sources of Express and Audit Program Awareness for Medium and Large Customers
General Population versus Participant Population

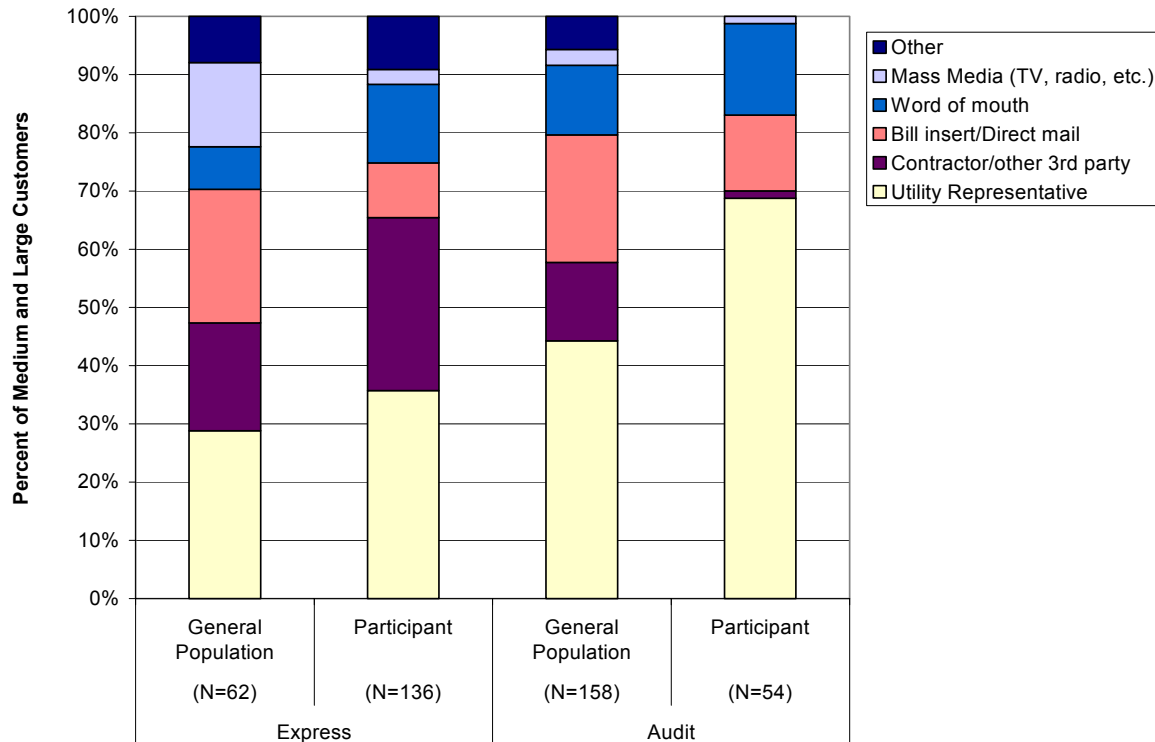
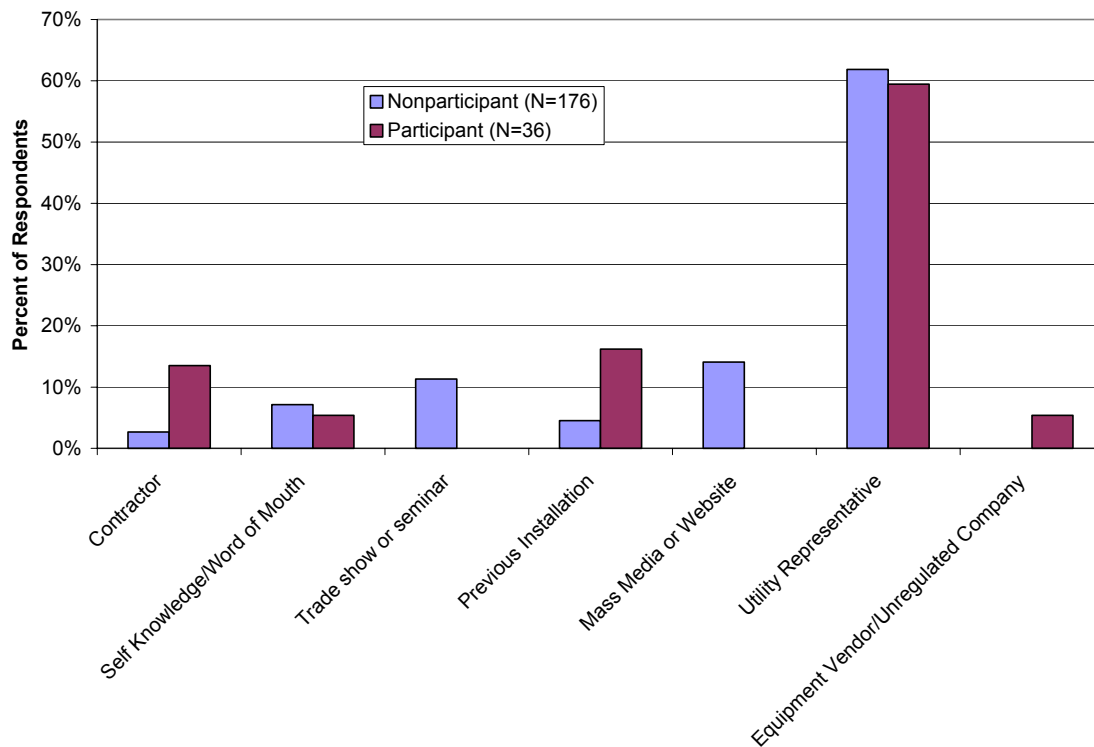


Exhibit 7 below shows sources of SPC program awareness among all participants and the large customer (500 kW+) general population. SPC participants became aware primarily through their utility representative, at almost 60 percent of participant respondents. Vendors and contractors have a more moderate role, at less than 16 percent combined. The most effective vehicles are the contractor and previous installation experiences, where the percent of participants finding out about the program exceeds the general population levels. Trade shows and mass media are moderately effective at informing customers, but not at drawing them into the program. The utility representatives, while not more than proportionally effective do have solid results and as noted above, are responsible for a large portion of program awareness.

Exhibit 7
Sources of SPC Program Awareness



In summary, among smaller customers direct mail is effective in informing customers of both the Express and Audit programs. However, contractors are the major recruiting force into the Express program, while direct mail is effective for the Audit program. Utility representatives are effective with smaller customers, but are not able to reach out to a significant portion of the general population. Among larger customers, utility representatives play a significant role in awareness and recruitment for all three programs.

While the Audit program does not show up as a major source of Express or SPC awareness in the exhibits above, there is clearly a strong link between the programs, as will be discussed in more detail below. The absence of the “Energy Audits” as a major sources of awareness is probably due to Audit referrals being reported by respondents as ‘Utility Representative’ referrals rather than an ‘Audit Program’ referral. A full 23 percent of Express program participant survey respondents reported having a utility sponsored energy Audit prior to Express participation.

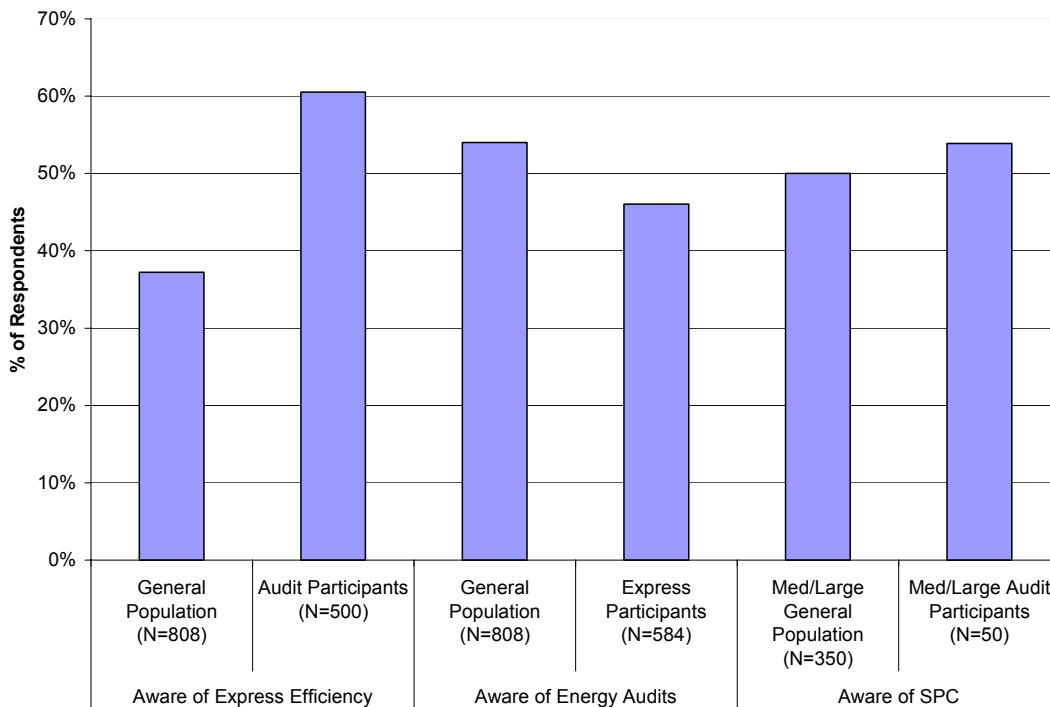
4. EVIDENCE OF PROGRAM LINKAGE

Next, evidence of program integration is presented focusing on cross-program awareness and participation.

Exhibit 8 below shows the level of program awareness for the Express, Audit and SPC programs among different participant populations and the general population. The Exhibit demonstrates that the Audit program is quite successful at increasing awareness of the Express program. Audit participants have significantly higher rates of awareness of the Express program than the general population, 61 versus 37 percent.

The SPC awareness calculations are restricted to medium and large customers, because most participation is in these segments. Audit program participation does not appear to have a measurable impact on awareness of the SPC program. It should be noted that levels of awareness of SPC among both populations is quite high, at around 50 percent. Further, SPC was available for a fairly short period of time in 2002 due to early full program subscription. Once the SPC program was full it was no longer necessary to actively promote it.

*Exhibit 8
Levels of Program Awareness*



Measuring the market penetration of the Express program among Audit participants can be approached in several different ways. Three techniques are presented here: program years 2000 through 2002 tracking database analysis, program year 2002 tracking database analysis, and self-report data analysis. The three techniques and corresponding results are presented below.

The first approach is based on an analysis of the Audit and Express tracking system data, as well as CIS data. The method is designed to give ample time to Audit participants to request an Express rebate. The program year 2000 Audit participant tracking system was compared with the Express tracking systems for program years 2000 through 2002. The results of this analysis show that the market penetration of the Express program is 6 to 7 times higher among Audit participants than in the general population. Twenty-two percent of the 2000 Audit participants went on to participate in Express in 2000, 2001 or 2002, versus 3.2 percent of the general population. It is important to allow sufficient time to pass after Audit participation before measuring linkage to rebate programs. As shown in the 2002 Audit program evaluation, more expensive and more complex measures are associated with longer time periods between receipt of the Audit report and subsequent measure adoption.

The second method is similar to the first, but is based on an analysis of the program year 2002 Audit and Express tracking systems, and CIS data. The method requires merging the tracking systems and also calculating the general population participation rate. This approach reduces the average time a 2002 Audit participant has to participate to six months. The results confirm findings from the previous approach with market penetration six times higher³ among the Audit participant population versus the general population. Exhibit 9 below shows the market penetration of Express among Audit participants versus the general population by customer size and utility service territory. The Exhibit also shows the ratio of Express program penetration rates within the Audit program population to those in the general population. Overall penetration in Express is 6 times higher than in the general population. Larger ratios indicate more effective program linkage between the Audit and Express programs.

³ The cross program participation calculation does not include SDG&E due to the unavailability of account numbers in the Audit tracking system.

Exhibit 9
Market Penetration of Express
Audit Participant versus General Population by Customer Size and Utility

Utility	Customer Size	Express Market Penetration		Ratio of Audit to General Population Penetration Rates
		Audit Participants	General Population	
PG&E				
	Large	19.4%	1.7%	11
	Medium	13.1%	2.8%	5
	Small	8.6%	0.7%	12
	Very Small	3.5%	0.5%	8
	Total	5.2%	0.6%	9
SCE				
	Large	0.4%	0.1%	4
	Medium	4.3%	1.7%	2
	Small	2.5%	1.6%	2
	Very Small	2.1%	0.6%	3
	Total	2.2%	1.1%	2
SCG				
	Large	22.2%	1.5%	15
	Medium	9.5%	3.1%	3
	Small	7.8%	1.0%	8
	Very Small	0.4%	0.1%	8
	Total	3.6%	0.2%	22
Total				
	Large	2.2%	1.2%	2
	Medium	8.6%	2.3%	4
	Small	7.2%	1.0%	7
	Very Small	2.5%	0.4%	6
	Total	4.1%	0.6%	6

The third method relies on self-reported data from the Audit participant surveys conducted mid-summer 2003. Although self-report data is less reliable in some respects than tracking and CIS data, it also has advantages as many account numbers are missing from Audit tracking databases. In addition, because the surveys were conducted mid-2003, program year 2002 participants had at least six months to make an installation, and about half had a year or more. Self-report data again indicates the market penetration of the Express program among Audit participants is 6 to 7 times higher than among the general population. This is a strong result. However, the absolute values of these participation rates remain somewhat low, with 13 percent of Audit participants and two percent of the general population reporting Express participation.

Participation rates in SPC are also much higher among Audit participants than the general population. Only one technique was used to measure the cross-program participation between

the Audit and SPC programs. The Audit program was not focused on large customers in 2000, with less than five percent of participation in the medium and large size categories. Self-report survey data will not support this type of analysis due to the small sample size. Thus, only a merge of the Audit and SPC 2002 tracking systems is used to assess cross-program participation. In addition, investigation is limited to PG&E and SCE—SCG does not offer the SPC program and SDG&E did not have complete Audit tracking system data.

The analysis results show that SCE Audit program has very good linkage with the SPC program. All of SCE’s 2002 Audit/SPC customers had participated in the SCE-MCD⁴ audit, which are on-site audits geared toward larger customers. Exhibit 10 below compares the market penetration of the SPC program among the Audit participant population and the MCD Audit participant population to the SCE⁵ general population by customer size and selected segments. The rate of SPC participation among medium and large Audit participants in SCE territory (5.3 percent) is 7 to 8 times higher than among the SCE general population of medium and large customers (0.7 percent). SPC market penetration rates are higher within the medium and large Industrial/Agriculture segments, for Audit customers (8.0 percent) and the general population (1.3 percent.)

The SCE MCD Audit program is quite successful in referring Industrial/Agricultural Audit customers to the SPC program, and these customers make up a more than a proportional number of Industrial participants within SCE service territory. The SPC and Audit ‘dual-participation’ group are 54 percent Industrial and Agriculture, versus just 21 percent of the SPC only group. This is a notable accomplishment particularly in light of the larger and more complex projects these customers tend to install. (This will be discussed in more detail in the following section, “Benefits of Program Linkage”.)

Exhibit 10
Market Penetration of SPC
SCE Audit Participant versus General Population
by Selected Segments

Utility	Customer Size	SPC Market Penetration		
		Audit Participants	Audit Participants	General Population
SCE				
	Total	1.9%	5.5%	0.1%
	Total Medium and Large	5.3%	5.5%	0.7%
	Total Md/Lg Industrial/Agriculture	8.0%	8.2%	1.3%

⁴ Major Customer Division.

⁵ Note cross program data is not available for SDG&E, and PG&E had very few customers that went from Audit to SPC in 2002. The latter finding may be due to incomplete data on large company audits obtained for this evaluation.

Exhibit 11 below shows the number of sites in the 2002 Audit program, 2002 SPC program and the number that participated in both, by size and IOU service territory.

Exhibit 11
SCE Service Territory Audit/SPC Cross Program Participation Summary
Based on Program Year 2002 Tracking System Analysis
by Customer Size

Customer Size	Audit	SPC	Audit and SPC
Large	454	94	38
Medium	398	71	7
Small	358	3	0
Very Small	1317	14	3
Unknown	7302	39	9

5. BENEFITS OF PROGRAM LINKAGE

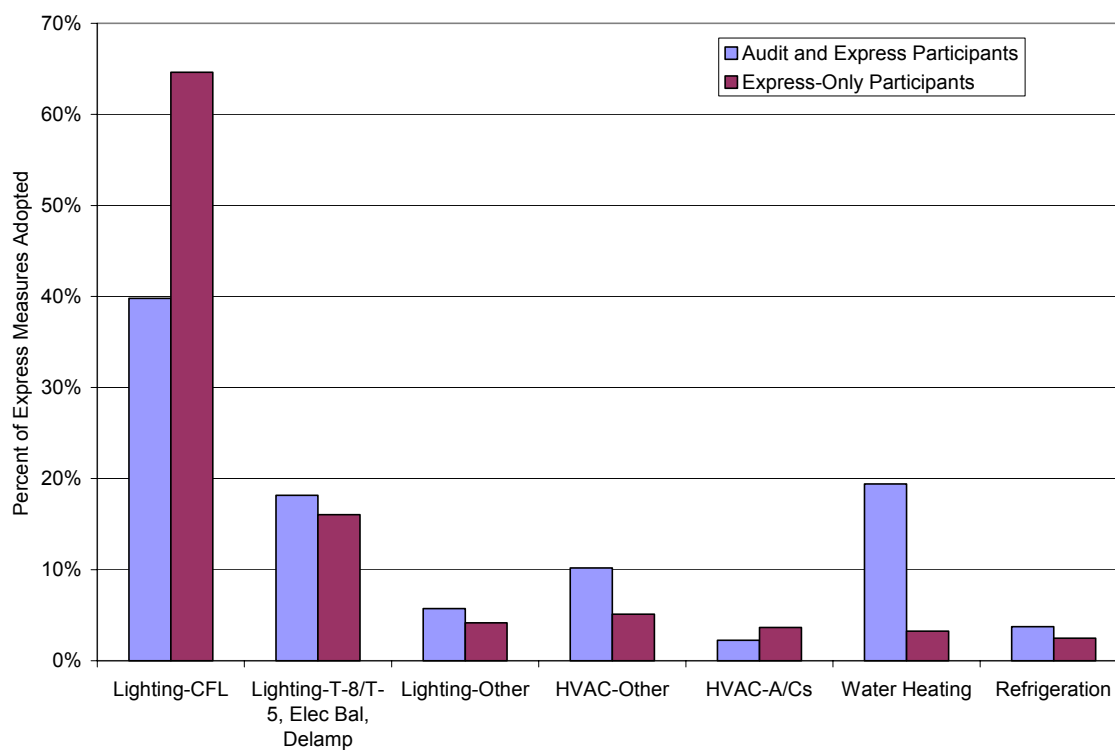
This section presents the significant and broad benefits of participating in the Audit program prior to the Express or SPC program. As discussed in more detail below customers with an Audit do a more varied range of measures through Express, and participate more often. They have a greater likelihood of purchasing energy efficient equipment in the future, and a greater likelihood of participating in Express and SPC.

5.1 Benefits of Audit Participation for Express Participants

Express participants who have had an Audit tend to complete projects of a similar size (in terms of percent of bill saved) as participants who have not had an Audit. However, customers with an Audit do a more varied range of measures through Express.

Exhibit 12 below presents the end use distribution of 2002 Audit participants that also purchased measures through Express (“Audit/Express Participants”) and Express-only participants. Both groups were concentrated in lighting measures, but the concentration is less pronounced among the Audit customers. Sixty-three percent of the customers with an Audit installed lighting measures versus 85 percent of the Express-only group. Audit customers are more likely to install water heating (19 versus 3 percent), HVAC (12 versus 9 percent) and refrigeration (4 versus 2 percent). Overall, the Audit/Express participant group is more diversified across end-use measure categories than the Express-only group.

Exhibit 12
Express Measure End-Use Distribution
2002 Audit/Express Participants versus Express-Only Participants



Within Lighting measures, customers who participated in the Audit program adopted a more diverse set of technologies than those who did not. Compact Fluorescent bulbs are prevalent within each group, but are less dominant among the Audit participants. Exhibit 13 below shows the distribution of lighting measures among the cross-program participants versus Express-only participants. Thirty-eight percent of the lighting measures installed by Audit and Express participants were something other than a CFL, while just 25 percent of the Express only participants installed something other than a CFL. These Exhibits are strong evidence that Express participants who go through the Audit program consider a more comprehensive set of measures.

Exhibit 13
Lighting Measure Installations
Among Audit/Express versus Express-Only Participants

Measure Description	Audit and Express Participants	Express Only Participants
Lighting-CFL	69%	80%
Lighting-T-8/T-5, Elec Ballast, Delamping	31%	20%
Lighting-Other	10%	5%

Customers who have had an Audit participate in Express more times than those who have not. The approach used to isolate this effect was to investigate program year 2000 Audit participants and determine the number of distinct program years that the customer participated in Express between the years 2000 and 2002. Distinct program years were required to define separate participation occurrences in order to avoid confusing applications and distinct projects or participation events. This approach revealed that 8 percent of Audit participants purchased equipment through Express in more than one program year between 2000 and 2002. In contrast, an average of only 4 percent of program year 2000 Express-only participants made more than one purchase through Express between 2000 and 2002. While we don't know for certain why this occurs, we can speculate that Audit participants are aware of more energy efficient technologies that would be appropriate for their business than those who have not had an Audit.

Exhibit 14 below demonstrates that Express participants who have had an Audit are more likely to purchase energy efficient equipment in the future relative to Express-only participants. This finding reinforces the distinct roles, distinct benefits and continuing need for both the Audit and Express program. This and other exhibits in this section shows that when the two programs work together more is gained through Express participation from a customer that has had an audit.

Exhibit 14
Likelihood of Purchasing Energy Efficient Equipment in the Future
Express and Audit Participants versus Express Only

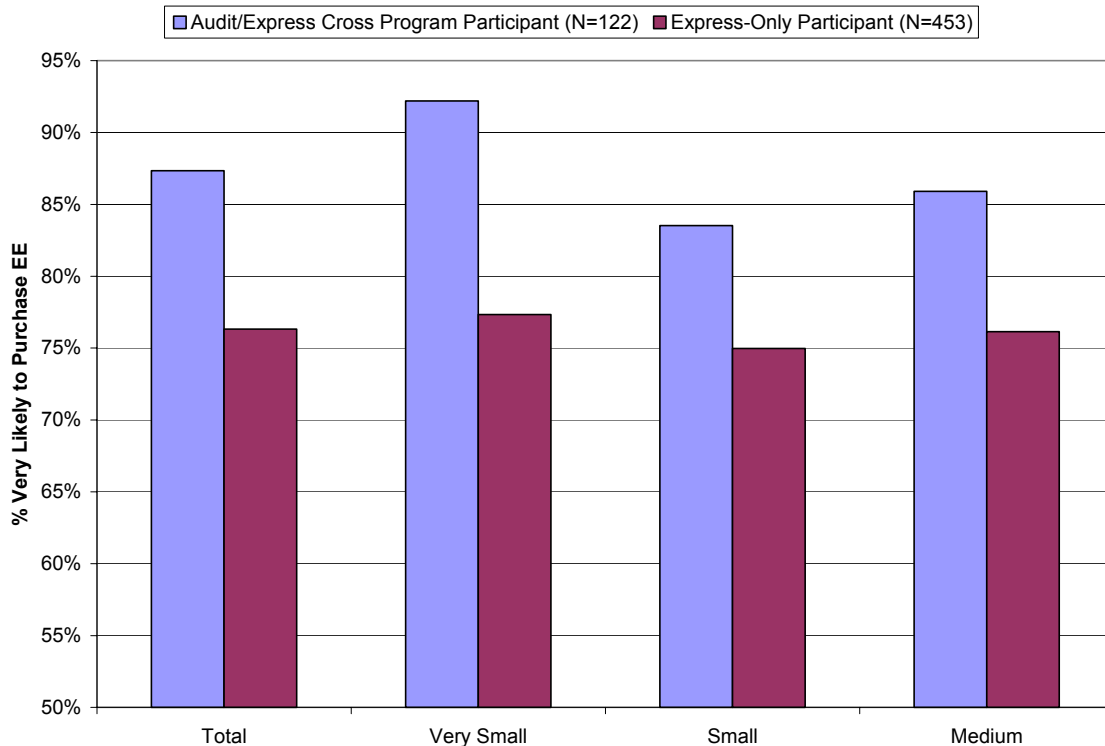
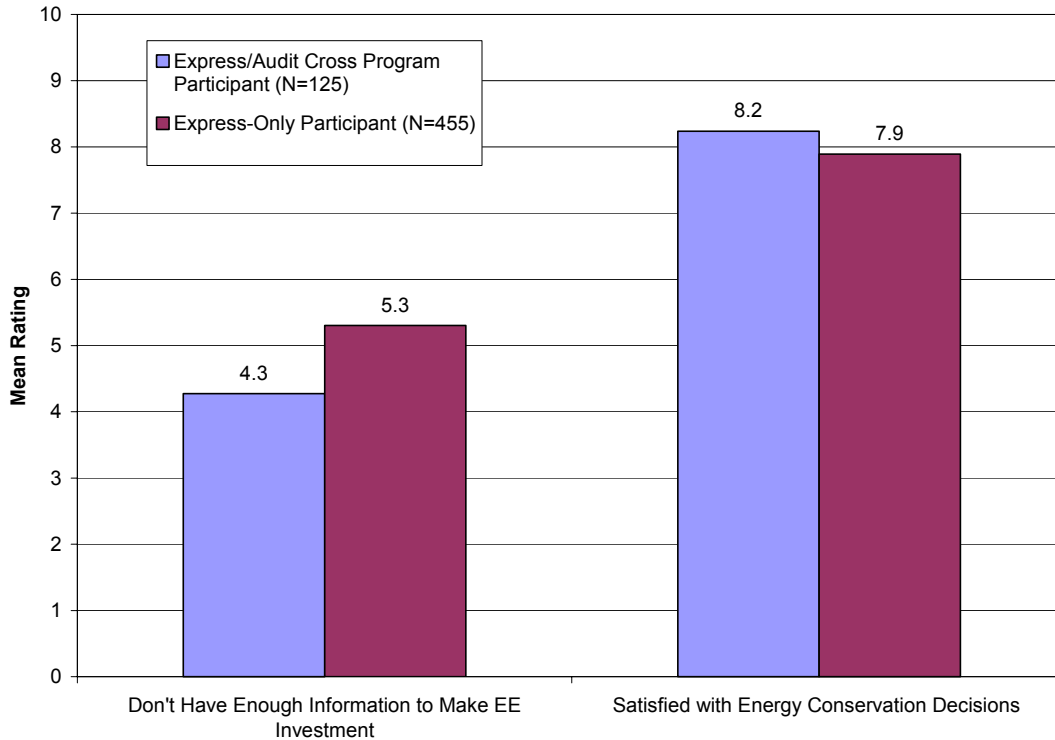


Exhibit 15 below shows some key differences in market effects indicators between Audit/Express participants and Express-only participants. Survey respondents were asked to rate each comment on a scale of 1 to 10 where one is completely disagree and 10 is completely agree. The Exhibit shows that Express participants that had an Audit are more comfortable making energy efficient investment decisions and are more comfortable with the decisions they have already made.

Exhibit 15
Market Effects of Audit Express Cross Program Participation



There are other interesting and important differences between Audit/Express participants and Express-only participants. Audit/Express program customers are more likely:

- to be very satisfied with their bill savings (54 percent versus 50 percent)
- to take energy conservation actions other than installing new equipment (75 percent versus 69 percent.) They also do more energy conservation actions, with an average of 2.2 actions per Audit and Express participant versus 1.9 actions for an Express only participant.
- to be better informed about the Express program, with 57 percent aware that the Express program offers online applications, versus just 40 percent of non-Audit Express participants.

The above discussion demonstrates the value of the Audit to Express participants. The primary reasons customers are not installing recommended equipment is due to the first-cost barrier. Exhibit 16 below illustrates the prominence of this barrier to adoption among Audit participants. The exhibit shows the responses of Audit participant survey respondents when prompted for the reasons they chose not to install recommended measures.

Exhibit 16
Audit Participant Reasons For Not Installing Recommended Measures

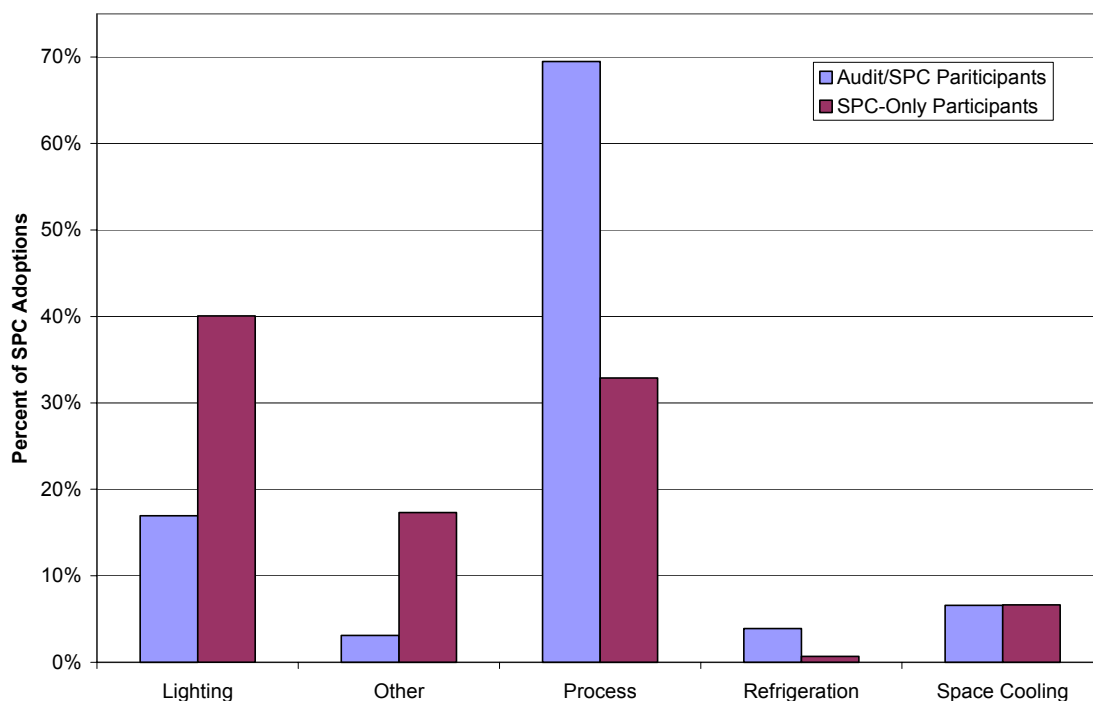
Reason for Not Installing Recommended Equipment	Percent of Responses
Do not have enough money	41%
Other priorities for capital spending	12%
Savings did not justify added investment cost	11%
Owner responsible for changes	11%
No perceived need	9%
Other	15%
N	180

5.2 Audit/SPC Cross Program Participation Benefits

This report is able to leverage rich databases for analyzing benefits of program linkage between the Audit and Express programs. However the databases available to support a similar investigation of the benefits of SPC/Audit participation are more limited. The Express and Audit programs have large participant databases, and were able to have large samples in the 2002 participant surveys. The 2002 SPC program is smaller, and the participant survey is small in sample size, with 36 completes. This size does not support segmented survey data analysis, particularly investigation of market effects among Audit/SPC combined participants versus SPC-only participants. For this reason, the following analysis is based primarily on tracking system assessments.

The examination of the cross program effects of Audit participation on SPC participants is limited to the SCE territory where there were enough cross-program participants to analyze. The analysis shows that Audit participants tend to do more Process oriented projects. As shown above, this is in part due to the relative success of the SCE Audit in recruiting Industrial participants into the SPC program. As shown in Exhibit 17, SPC participants with an Audit were much more likely to do a process retrofit (69 versus 33 percent) and much less likely to do lighting (17 versus 44 percent).

Exhibit 17
SPC Project End-Use Distribution
2002 Audit/SPC versus SPC-Only Participants



In addition to more complex projects, SPC participants who had an Audit also do much larger projects than those without an Audit. In fact, this difference is quite substantial, with the average account participating in both SPC and the Audit program saving 1.1 GWh and the average non-Audit participating SPC site saving just 0.5 GWh⁶.

Overall, these data show that the SCE MCD Audit is successful in referring Industrial customers to the SPC program, and this has a positive impact on the SPC project end-use distribution, as well as the average savings achieved from SPC projects per site.

⁶ This difference is particularly large in 2002 due to a significantly larger than average project, which increased the average savings considerably among the Audit/SPC participants. Without this project the Audit/SPC group remains higher (0.6 GWh versus 0.5 GWh) but the difference is more moderate.

6. KEY FINDINGS AND RECOMMENDATIONS

6.1 Key Findings

The data and key findings reviewed in this report indicate that there is a clear and distinct need for the Audit, Express and SPC programs. There is compelling evidence that when the Express and Audit programs work together assisting the customer throughout the awareness, knowledge, intentions, adoptions continuum, the customer emerges significantly more transformed by the programs than if participation is limited to one of the programs.

Those that participate in only the Audit program are most likely to cite lack of funds as the primary reason for not implementing equipment recommendations. Referrals to incentive programs directly address this barrier. Express and SPC are influential at the time of purchase and help participants overcome their first-cost barriers to adoption. Express participants that participate in the Audit program emerge from the Express program notably more knowledgeable about energy efficiency.

The Audit program is successful in raising awareness of the Express program among its participants, and also encouraging a significant number to go on to participate. The Audit program is also successful in raising awareness of SPC, but the limited availability of SPC in 2002 may have reduced the number of referrals.

6.2 Recommendations

As discussed above, the utilities are effective in promoting Express through the Audit program, and should continue these efforts. Any way that the linkages or promotions could be strengthened would benefit both programs. For example, providing a filled-out Express application as part of the Audit report would improve the link between Audit and Express. The Audit report might include a separate page with descriptions of possible SPC projects with the name and contact information of a utility representative that could help them through the application process to encourage SPC participation.

One of the challenges in linking the Audit and Express programs lies in the disparate ways that participants are drawn into the programs. Utility representatives and direct mail efforts draw Audit participants into the program. Contractors are primarily responsible for recruiting Express participants. Although contractors are informing the general population of the Audit program, very few Audit participants heard about the program from a contractor.

Contractors are very successful in encouraging Express participation, thus it would seem an effective way to improve cross-program participation would be to involve them in the Audit referral process. However, due to issues of favoritism it probably is not possible to make audit reports available to contractors, even with customer approval.

Another way to bring contractors and Audit participants together is through Community Based Organizations (CBOs.) Meetings held by CBO's are already used successfully to recruit small customers into the Express and Audit programs. Contractors and small business owners are invited to the meetings and the programs are promoted, yielding many Express signups.

A more widespread and slightly modified use of CBO meetings could improve integration of the Audit and Express programs and improve audit customer follow through. More specifically, the Audit reports could provide a list of upcoming CBO events where contractors and utility staff would be attending, and invite the Audit customer to attend and bring the Audit report with them to the meeting. The customer could be enticed to attend by the promise of an Audit follow-up booth where IOU staff would be available to answer questions or provide additional information regarding the customer's Audit report. Contractors would also attend the meeting, and could be involved in answering specific equipment questions and signing up Audit (and other) customers for Express.

A third idea for integrating contractors in the referral process from Audit to the Express program is to provide lists of approved contractors capable of installing recommended equipment together with the Audit report. Again, this may not be possible due to perceptions of contractor favoritism.

Interviews with Express-participating contractors were completed as part of the 2002 Express evaluation. Respondents were asked for feedback regarding ideas similar to those discussed above. The results are shown in Exhibit 18 below. Contractor response to all three ideas is favorable, and contractors are most positive about the idea of having access to Audit reports.

*Exhibit 18
Contractor Responses to Program Innovation Ideas*

Program Idea	Usefulness to Vendor			
	Very	Somewhat	Not at all	N
Access to customers' energy Audit data	66%	13%	22%	32
Meeting with community-based organizations to promote program to small businesses	44%	41%	13%	31
List of utility-approved contractors for customers	38%	34%	25%	31

Providing a turnkey program alternative that combines Express and Audit services may improve program results, particularly for smaller customers. Smaller customers express more need for Audit follow up services and have lower measure uptake rates than larger customers. Smaller customers also have more limited resources to devote to energy saving projects. This type of 'turnkey' approach has been shown to be effective in third party programs in San Francisco, the East Bay and elsewhere.

Continuing the strong link between Audit and SPC, particularly among Industrial/Agriculture customers may result in larger, more complex projects completed through the SPC program. On-site auditors could continue to inform customers of the SPC program during the Audit and provide a list of possible SPC projects, and the name of a utility representative that could assist them through the SPC application process with the Audit Report. Utility representatives play a key role in program awareness and recruitment for all three programs. Thus, they seem the best source for successful linkage as well.

A final note, while this report has focused on the three primary nonresidential statewide programs, the Audit report should provide referrals to all programs that would benefit the customer, including but not limited to Express and SPC.