EVALUATION OF THE 2003 STATEWIDE EDUCATION AND TRAINING SERVICES PROGRAM
FINAL REPORT

Prepared for
Southern California Edison,
Pacific Gas and Electric Company,
San Diego Gas and Electric Company and
Southern California Gas Company

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Executive Summary

This report presents evaluation findings for the 2003 Statewide Education and Training Services Program, sponsored by Southern California Edison (SCE), Pacific Gas and Electric Company (PG&E), Southern California Gas Company (SCG), and San Diego Gas and Electric Company (SDG&E).

The Statewide Education and Training Services Program (program) is designed to collect, transfer, research, evaluate, demonstrate, and showcase energy-efficiency concepts, technologies, and products for manufacturers, businesses, researchers, educational institutions, and the general public. The program promotes energy efficiency to a variety of customer segments through Energy Centers (physical and virtual) and other informational programs.

The evaluation was designed to:

- Measure program effectiveness and test program theory assumptions
- Provide ongoing feedback and corrective guidance regarding program design and implementation.

Study Methodology

This study involved four separate activities.

- A satisfaction survey of 318 attendees to the six centers in 2003
- Six case studies of specific issues, one for each center. These case studies are summarized in Table E.1
- An examination of the Best Practices at three other energy efficiency organizations and two professional firms that offer training of trainer services and other adult education activity support
- A brief examination of the in-class evaluation materials used by the centers.

Overall Findings

For many years, the six centers have provided a wide range of educational services, with broad objectives designed to collect, transfer, research, evaluate, demonstrate, and showcase energy-efficiency concepts, technologies, and products for manufacturers, businesses, researchers, educational institutions, and the general public. One measure of an energy center's effectiveness is its ability to affect energy-saving actions.

Table E.1: Summary of Six Center Evaluation Case Studies

Center Name	Case Study	Purpose of Case Study	Case Study Activities
PG&E's Pacific Energy Center	Tool Lending Library	Review the operations of the TLL, with emphasis on estimating the TLL's record on saving energy.	Interview with staff, survey of 104 tool borrowers, follow-up interviews with 11 largest energy savers.
PG&E's Energy Training Center	Title 24 Courses	Identify approaches to increase participation in T-24 courses.	Participant and nonparticipant surveys, in-depth interviews with industry experts.
SCE's Agricultural Technology Application Center	Moisture Measurement Workshop	Identify approaches to increase participation by agribusinesses and attract new customers from additional selected market segments.	Interviews with staff and instructor, interviews with 3 agricultural associations, survey of 45 eligible customers (agricultural and others), and interviews with 6 prior attendees.
SCE's Customer Technology Application Center	Hard to Reach Customers	Identify approaches to increase participation in CTAC courses of HTR customers in the Coachella Valley.	In-depth interviews with business associations and other organizations in Riverside County, secondary research on the composition of the region
SCG's Energy Resource Center	Lighting Seminars	Identify approaches to increase participation in two ERC courses on lighting.	In-depth interviews with target market industry experts.
SDG&E	Managing Your Business's Energy Costs	Identify what steps could be taken to increase enrollment.	Interviews with staff, interviews with 5 cosponsoring organizations, interviews with 10 participants, and surveys of 45 eligible customers.

We see this and every evaluation period as an excellent opportunity for the centers to step forward and strengthen their role in generating energy savings. Our examination of Best Practices and the six case studies provide a guide to the centers to increase their effectiveness proactively in both attracting attendees to utility incentive programs and motivating attendees to take action whether or not other utility incentive programs exist.

One saying we garnered from our Best Practices assessment, paraphrased here, epitomizes the message we wish to convey to readers of this evaluation: "No learning has taken place if it does not lead to a change in behavior." This is an essential construct for the centers to embrace in moving forward. Courses will be more attractive to potential attendees if they explicitly are designed to help save energy. Courses will be more effective if they follow the Best Practice example of gearing course delivery and content towards arming each attendee with the motivation, confidence, and learned skills needed for taking action.

Below, we provide recommendations for actions that each center should consider, followed by separate recommendation pertaining to each case study. The actions recommended involve steps the centers can take to modify course content and instruction, the marketing of courses, and the evaluation of courses by attendees.

Marketing

Expanding the reach of marketing beyond the existing channels was a major recommendation of the 2002 STEC evaluation, and that issue still is dominant in our set of recommendations. The centers need to expand their reach to draw more attendance from persons and firms that have not previously partaken in center activities. There are excellent examples of centers using local and regional trade associations for more effective target marketing; however, we found other examples where the centers did not take enough responsibility for maintaining the relationship and addressing the trade associations' needs.

The Best Practice principles suggest that successful marketing starts with development of courses geared to the needs of a specific audience and marketed directly to them. Our case study of lighting courses at the SCG-ERC illustrates this principle. The courses were designed and marketed for the broad range of clients, ranging from lighting designers to architects and builders. The needs of these professions are different enough that a single course is not attractive as it covers material not relevant to the specific group. Separate shorter courses designed specifically to meet the needs of each audience should be of more interest to the various parties. It is recommended that separate courses be designed to meet the specific needs of each sector.

Effective marketing must convey the specific value of the course to the target market. The message should emphasize the specific benefits that attendees will come away with. While the goal of energy efficiency programs may be to generate energy savings, it must be recognized that that message is not always of greatest value to potential attendees. Centers will need to tailor different messages depending upon the course content and the audience. For example, a course that certifies contractors to participate in an energy-efficiency program could lead with "Stay ahead of the competition . . .", mention "business profit and growth", and talk about helping customers solve energy-related problems and increasing comfort and safety.

Other marketing recommendations include:

- Draw new audiences by expanding beyond the existing distribution lists each center now relies upon,
- Provide marketing messages that emphasize to potential attendees direct benefits to them from attending courses,
- Increase the reach of course-specific marketing efforts by partnering with leading trade groups,
- Market course offerings at professional conferences and trade shows,
- Identify and obtain certification to offer additional educational credits,
- Target e-mail marketing to only those parties likely to be interested in the course ,

- Make course content specific to one (or possibly two) professions,
- Bring some courses closer to the customers,
- Offer shorter courses for some subjects and audiences, and
- Consider charging for courses.

Course Design and Implementation

The Best Practice examination demonstrated a series of principles in adult learning that should be a part of every course offered by the centers. These principles begin with a need to ensure that the focus of the classes moves beyond one that is only a transfer of information from knowledgeable instructor to attendees, to one that empowers attendees to take specific actions. The lecture type of instruction is not very effective in communicating information that will be retained by attendees. More importantly, this approach is less likely to lead to the desired actions being taken. Adult learning specialists have developed a set of principles that the centers should adopt for the courses to be more effective. These include:

- Focus courses on obtaining actions not just transmitting knowledge,
- Structure course content so that it is practical and applicable to the participants in their jobs,
- Limit course content to teaching of three major objectives; do not overwhelm attendees with too much information,
- Provide opportunities for attendees to participate and exchange ideas,
- Structure courses so that they engage the attendees in active participation in order to retain information conveyed,
- Build in opportunities for post-training reinforcement,
- Consider providing training to trainers to incorporate adult learning concepts, and
- Structure each workshop so that each attendee leaves with an action plan developed by that attendee.

Evaluation

All of the Best Practice interviewees rely heavily on evaluation as an integral part of any course. These experts suggest the following uses of evaluation:

- Use evaluations to determine if actions are being taken as a result of course attendance,
- Use evaluations to collect more than just satisfaction information, including marketing source, instruction quality, issues with course content, issue with setting, and helpfulness in moving to energy actions, and
- Perform evaluations early and often, especially for courses that span several days. Waiting until the end of a course does not help current attendees.

Findings from the Statewide Survey of Course Attendees

A satisfaction survey was conducted by phone with 318 attendees to the six centers in 2003. The results indicate:

- Overall satisfaction levels are quite good for the majority of ETS workshops, with nine out of 10 participants rating themselves satisfied with the workshop they attended.
- Similarly, nine out of 10 attendees would recommend the workshop they attended to a colleague.
- Overall, the strongest points of the workshops are the strengths of the instructors, with 'technical knowledge of the instructor' and 'teaching skill of the instructor' receiving favorable ratings by nearly all attendees.
- Eight out of 10 participants feel that they better understand how to improve efficiency at their own facilities and are more likely to specify energy-efficient options in the future. Three-quarters are more aware of high-efficiency solutions and have more confidence in the performance of these products.
- Approximately one-third of workshop attendees report operational and maintenance changes made as a result of their participation in the workshop.
- A majority of participants feel that the course information will influence future purchase decisions (64%).
- About 10% of attendees report subsequent participation in utility rebate programs as a direct result of their workshop attendance.

Recommendations for the Pacific Energy Center's Tool Lending Library

This case study investigated the Tool Lending Library (TLL) to estimate the amount of energy saved by borrowers:

- Funding for TLL should be increased. The TLL is a relatively low-cost service that helps generate substantial benefits. This research shows that when firms are made aware of the tool lending concept, they are very interested in the services. With strategic marketing, the TLL could expand demand for its services. Finally, given the work done to use the Internet for on-line applications and answering technical questions, the TLL is well organized and should be capable of meeting larger demand if the budget were increased.
- Extrapolating survey and interview results to all 2003 TLL borrowers (this assumes that the population of TLL users has characteristics similar to the characteristics of those users who responded to our phone survey), shows that TLL users implemented projects that saved $18 million/yr (with 90% confidence intervals at $2.2 million and $34.8 million) and 185 million kWh/yr. We present these energy savings estimates with the caveat that the task of attributing savings to an education program is difficult: Customers are influenced by many sources of information and education before they purchase any energy efficient equipment.

Because of this, the energy savings we have estimated cannot be attributed solely to the TLL and should not be used as the sole indicator of the program's value.

- Use promotion wisely. If the TLL wants to substantially increase lending activity it will need to market more, building demand strategically so that growth occurs in a controlled fashion and projects undertaken are ones with high potential returns.
- Move towards a separate budget line for the TLL. The obscurity of the TLL is partly because the TLL stays hidden within the Pacific Energy Center's activities. Making the TLL its own budget brings greater attention and awareness, which would be positive, and more scrutiny, which, given the results of this evaluation, should be no problem for the TLL to handle.

Recommendations for Energy Training Center's Title 24 (T-24) New Construction Workshops

One key objective of this case study was to find out why more people were not taking T-24 courses. Another important objective was to help the PG&E Energy Training Center (PGE-ETC) prepare for changes in the T-24 rules that will go into effect in October 2005. These rule changes will create a new need and demand for T-24 training, and it is important that the PG&E-ETC be ready to meet this new demand effectively. The following are recommendations for accomplishing this. They are ranked based on average ratings of the recommendations provided by T-24 experts.

- Make T-24 presentations at trade association and International Code Council (ICC) meetings and write T-24 articles for trade association journals. The T-24 experts say that market actors are more willing to listen to information presented by their own trade associations. ICC meetings represent a unique opportunity to get access to builders.
- Continue and even expand the PG&E-ETC's mobile training component. The surveyed market actors and the Title 24 experts all agreed that a mobile training center would increase attendance.
- Work with the California Energy Commission (CEC) and other California Energy Centers to create "one-stop shopping" for T-24 training information. A unified calendar listing all the T-24 training opportunities available across the state would be useful for market actors. The CEC website would be the logical place for such a calendar.
- Do a targeted T-24 mailing to key market actors. This mailing would emphasize the importance of the impending T-24 standards and would feature success stories. These might be builders or contractors who are avoiding problems down the road by getting T-24 training now. The effectiveness of the mailing would be increased if it were done in cooperation with trade associations. For example, the information might be sent under the cover letter of a number of different trade associations, with postal costs shared among the participating organizations.
- Work with HVAC supply houses to disseminate T-24 information. Experts note that HVAC contractors rely a lot on these companies for energy-efficiency information.

- Make the new T-24 standards more relevant to the bottom line of businesses in both marketing messages and course content.
- Consider a wider variety of T-24 course offerings.
- Explore the possibility of supplementing T-24 training center courses with web-based seminars. While web-based seminars would certainly be no substitute for the PG&E-ETC's hands-on training, they might be useful for providing market actors with a basic introduction to the new T-24 rules. This knowledge might be enough to encourage market actors to take more in-depth courses.
- Work with the CEC and other California Energy Centers to create a "Title 24 for Dummies" booklet. This would be a user-friendly way to introduce many market actors to the basics of the new T-24 rule changes. This introductory knowledge could encourage some market actors to take more in-depth training.

Recommendations for Agricultural Technology Application Center's Moisture Sensing Workshop

This case study focused on the factors that impede agribusiness attendance at this workshop and examined opportunities for broadening the reach of this workshop to nonagricultural irrigation markets.

- The key recommendation with respect to the agricultural market is to increase awareness by modifying the promotion of the course. AGTAC courses are well used by customers who are aware of their availability; consequently, boosting awareness should boost attendance.
- Increase the reach of course-specific marketing efforts by partnering with leading trade groups. This should be a key focus for the Moisture Sensing workshop's future marketing efforts. The use of promotions in trade association publications or announcements could be particularly helpful for outreach to golf course managers and to agricultural customers. AGTAC has an outstanding opportunity for leveraging communications of the local county farm bureaus, which have good reach into the agricultural market and are willing to place announcements in their monthly publications. If AGTAC could persuade the Southern California Golf Course Supervisors Association to assist in its promotional efforts, this would effectively put course information before most members of this market segment.
- Rewrite promotional materials for this course. Marketing materials need to draw a more direct linkage to key concerns and benefits of participants. For any customer group, messages emphasizing cost control will resonate. For managers at educational institutions, there is also strong interest in information on up-to-date technologies and what steps they can take given an aging irrigation infrastructure.
- Expand the e-mail notification effort. In order to increase marketing effectiveness of this approach, AGTAC must begin to compile e-mail addresses of nonparticipants.
- Build links from other SCE energy efficiency and business sector web areas to AGTAC'S site. Other customers are unlikely to find a link to the AGTAC section by means of navigating through the SCE site and browsing its content. At present

then, the AGTAC site looks effective for delivering information to agricultural customers but perhaps not to other markets served by this center.

- Schedule irrigation workshops in January and February to minimize attendance barriers related to conflicting seasonal business needs. Also scheduling workshops during relevant conventions or trade shows could improve attendance**.** Over half of the respondents (60%) indicated that this step would increase their likelihood of attendance.
- Offer both full 3-hour workshops as well as shorter, less intense informational sessions. Some customer segments, particularly agricultural customers, are resistant to the longer courses.
- Bring some courses closer to the customers to gain attendance from additional customer groups. A key consideration in planning how to take this course to other locations is the importance of the hands-on demonstrations to customers who prefer workshops as an informational vehicle.
- Test the effectiveness of alternative educational approaches. The findings from this research suggest that an audiovisual format such as DVDs or videotapes could be popular with certain market segments
- Continue to seek out high-caliber instructors. Satisfaction with past course experiences and expectations of high-quality course offerings are motivators for customers to closely examine the detailed brochures used in marketing these courses and to enroll in new courses.

Recommendation for the Customer Technology Application Center

This case study looked at ways to increase course attendance of hard-to-reach customers in the Coachella Valley at courses offered locally.

- Continue to work with Chambers of Commerce to get messages to business owners. Additional personal contact with Chamber representatives is necessary.
- Broaden marketing efforts by sending materials directly to all Chambers of Commerce and additional business organizations.
- Update contact lists and establish personal relationships with these contacts.
- Follow up with organizations after sending materials regarding course offerings.
- Establish an SCE presence in the community by participating in local events.
- Provide information to businesses organizations on locally held workshops with sufficient lead time.
- Pursue opportunities to coordinate with the Coachella Valley Economic Partnership.
- Make marketing emphasize how attending the workshop will help the businesses' bottom line, saving money.
- Make materials clear as to what the participant will get out of the class.
- Include endorsement or co-sponsorship by local organizations wherever possible.
- Make workshop titles clear. The workshop title should convey exactly what the workshop will cover in lay terms.
- Offer shorter (2- or 3-hour classes) early in the morning.

- Offer classes during the summer.
- Offer some Spanish-language classes.
- Provide materials to reference after the class.
- Provide courses that are highly applicable to the area.
- Include examples and/or exercises that are targeted to this area.

Recommendations for Energy Resource Centers

This case study explored the reasons for low attendance at two workshops on efficient lighting and approaches for increasing participation.

- Use professional organizations and their existing media to market courses to specific groups of professionals.
- Market course offerings at professional conferences and trade shows.
- Offer courses in conjunction with professional conferences or trade shows.
- Continue promoting workshops through e-mail. E-mail announcements about the course from trade or professional associations may be more effective for those not familiar with the ERC.
- Use targeted marketing lists (with a tailored message as discussed below) to promote classes.
- Make marketing messages specific to the professional group targeted. To attract members of a specific profession, make the message speak to their issues and needs:
    - Address the issues of interest to that particular profession. (See recommendation below regarding specificity of course content for more detail.)
    - Include the continuing education credits applicable to that profession.
    - Identify the profession by name.
    - Identify activities included in the course.
    - Identify what the audience will be able to do with the provided information (i.e., how it is of practical benefit to the participant).
- Make course content specific to one (or possibly two) professions.
- Include hands-on activities.
- Make content practical and applicable to the participants in their jobs.
- Identify and obtain certification to offer additional educational credits.

Recommendations for SDG&E's Seminar "How to Manage Your Business's Energy Costs"

This case study examined the barriers to seminar participation for small business customers and explored other information delivery options as solutions that might better address the critical participation barriers.

- Marketing strategies and outreach for educational services for the small business sector must reflect the difficulty of attracting interest in seminar attendance.

- Try a trial run of target marketing to this seminar to customers with expressed needs to reduce energy costs.
- To lessen scheduling difficulties, courses for small business should be kept to two hours or less and offered within five miles of the business audience. These findings suggest that something other than a formal seminar may be better suited to the small business market.
- Alternative educational approaches should be developed to supplement the reach of the seminars.
- The concept of using CDs or DVDs looks very promising, especially as a means of delivering information to the smallest businesses.
- Seeking to partner with local business groups is a sound approach.
- Success in partnering with local business organizations will be linked to the effectiveness of the partnering organization in turning out an audience.
- New partner organizations should be selected in a strategic fashion.

1 Introduction

This is the final report for the evaluation of the 2003 Statewide Education and Training Services Program, sponsored by Southern California Edison (SCE), Pacific Gas and Electric Company (PG&E), Southern California Gas Company (SCG), and San Diego Gas & Electric Company (SDG&E). This section provides a brief overview of the program, discusses the evaluation objectives and approach, and presents the organization of the remainder of the report.

1.1 Program Overview

The Statewide Education and Training Services Program (program) is designed to collect, transfer, research, evaluate, demonstrate, and showcase energy-efficiency concepts, technologies, and products for manufacturers, businesses, researchers, educational institutions, and the general public. The program promotes energy efficiency to a variety of customer segments through Energy Centers (physical and virtual) and other informational programs. Three of the four utilities possess physical Energy Centers: PG&E's Pacific Energy Center (PEC) and Energy Training Center (ETC); SCE's Customer Technology Application Center (CTAC) and Agricultural Technology Application Center (AGTAC); and SCG's Energy Resource Center (ERC). SDG&E offers energy-efficiency classes to its customers using other utility facilities or non-utility sites.

The 2003 program offered its core seminars and workshops, on which it has consistently relied to educate its target markets. The program also disseminated information about energy-efficiency technologies and practices at the center facilities with displays, demonstrations, technical consultants, facility presentations, fact sheets, and brochures. The utilities continued to leverage community organizations and local government and trade associations to gain access to a wider audience. The 2003 program placed a special emphasis on increasing the participation of hard-to-reach (HTR) customers by targeting a specific number of HTR seminars/events or a certain percentage of HTR seminar attendees.

1.2 Evaluation Objectives and Approach

The overall study objective was to evaluate program performance and effectiveness at achieving program objectives as well as provide feedback and corrective guidance. The evaluation results are intended to feed program planning, improve program design and implementation, and ultimately, improve future program performance. Specifically, the evaluation was designed to:

- Measure program effectiveness and test program theory assumptions
- Provide ongoing feedback and corrective guidance regarding program design and implementation.

Our approach to addressing the study objectives includes both an assessment of program effectiveness and a process evaluation. The activities taken include a participant survey

of 318 participants, one case study for each of the six centers, a review of best practice services at other energy-efficiency and adult training organizations, and a review of approaches that the centers can take to standardize data collection and evaluation processes.

The focus of this evaluation is the six case studies. We elected to do case studies because the 2002 evaluation had examined these issues using a broad scope that covered the common issues faced by the centers. The results produced findings, consistent with all of the earlier studies using a similar approach, that the centers' courses are well regarded by those in attendance. The report found a great need for market research and marketing support to increase the awareness of the centers and the programs they offer.

Rather than repeat the same study for 2003, we focused on the market research and marketing needs identified in the 2002 evaluation. It was felt that the program will benefit greatly from deeper, more custom-tailored research addressing the unique needs of each center and category of course offerings. It was also hoped that a detailed case study would be a better means of demonstrating to the centers the value of market-related research.

1.2.1 Description of the Case Studies

PG&E's PEC—Tool Lending Library

The PEC's Tool Lending Library (TLL) loans tools free of charge to people working on short-term energy-efficiency projects in California. The major focus of this study is to review the operations of the TLL, with particular emphasis on estimating the TLL's record on saving energy.

PG&E's ETC—Title-24 Seminars

The ETC offers several courses focused on the Title 24 standards. One key objective of this case study was to find out why more people were not taking T-24 courses. Another important objective was to help the PG&E-ETC prepare for changes in the T-24 rules that will go into effect in October 2005. These rule changes will create a new need and demand for T-24 training, and it is important that the PG&E-ETC be ready to meet this new demand effectively.

SCE's AGTAC—Moisture Measurement Workshop

Among the courses offered at AGTAC is a workshop titled "New Techniques for Measuring Soil Moisture." This course addresses technologies for both energy-efficiency and water conservation. In 2003, the course addressed the agricultural market, but for 2005, consideration is being given to offering the course to nonagricultural segments as well. Research priorities for this case study included the identification of approaches to increase participation by agribusinesses as well as assessing the potential for attracting customers from additional selected market segments, including ornamental agriculture, golf courses, parks and recreational facilities, and other large turf facilities.

SCE's CTAC—Hard-to-Reach Customers

SCE's CTAC targets some of its program offerings to HTR customers. In Riverside County (Temecula and Coachella Valley areas) CTAC offers courses locally to attract small business owners. This case study focused on ways to increase attendance by these HTR customers at the local course offerings.

SCG's—ERC

Southern California Gas Company offers two different half-day workshops on lighting at the Energy Resource Center located in Downey, California. Participation in the workshops has consistently been lower than ERC staff expected or wanted. This case study explored the reasons for low attendance and identified approaches for increasing participation.

SDG&E's—Managing your Business's Energy Costs

Among the energy-efficiency seminars offered by SDG&E is a course titled "How to Manage Your Business's Energy Costs," which is targeted at managers and owners of small- and medium-sized businesses. For this case study, SDG&E desired to evaluate what steps could be taken to increase enrollment and participation in this seminar as well as examine other possible modes for providing energy-efficiency information to this challenging market segment.

1.2.2 Participant Satisfaction Survey

Paralleling the evaluation of the prior year, a telephone survey was completed with a sample of workshop attendees. This survey was designed to gather information on workshop influences on barriers to adoption of efficiency practices, participant satisfaction, appropriateness of marketing and communications methods, and workshop effects on specification practices, equipment purchases and operational behaviors.

In all, 318 workshop participants were surveyed by telephone in January 2005. Attendees from all six centers were represented, with minimum quotas of 50 participants per center. The sample frame was drawn from program records, with representation across the array of workshops offered by each.

1.2.3 Best Practices Assessment

If the indicator of a training program's success is whether its students transfer knowledge into action, then one of the main purposes of the six energy centers is the education of adults so that they can engage in activities that save energy. If the energy centers adopt an explicit goal of driving students toward energy saving actions, the centers may need to reassess the courses they teach and the teaching methods they use so that these courses increase the likelihood that attendees will save energy.

The objective of the Best Practices task was to identify some best practices in energy education specifically and adult learning in general. These best practices could then be used to inform both the case study recommendations and general approaches that the centers could use to improve the marketing, delivery, and evaluation of the courses they

offer. In this work we formulate basic principles in adult education that have proven effective at other institutions and are likely to lead to energy savings.

1.3 Organization of Report

The rest of this report is organized as follows:

- Chapter 2: Survey of Workshop Attendees
- Chapter 3: Pacific Gas & Electric Pacific Energy Center—Tool Lending Library Case Study
- Chapter 4: Pacific Gas & Electric Energy Training Center—Title 24 Courses Case Study
- Chapter 5: Southern California Edison Agricultural Technology Application Center—Measuring Soil Moisture Content Case Study
- Chapter 6: Southern California Edison Customer Technology Application Center—Hard to Reach Customers Case Study
- Chapter 7: Southern California Gas Company: Energy Resouce Center—Lighting Controls for Energy Management and Advanced Lighting Technologies Case Study
- Chapter 8: San Diego Gas & Electric—How to Manage Your Business's Energy Costs Case Study
- Chapter 9: Best Practices
- Chapter 10: Common Evaluation Strategies
- Chapter 11: Summary and Conclusions

2 Survey of Workshop Attendees

2.1 Background

Paralleling the evaluation of the prior year, a telephone survey was completed with a sample of workshop attendees. This survey was designed to gather information on workshop influences on barriers to adoption of efficiency practices; participant satisfaction; appropriateness of marketing and communications methods; and workshop effects on specification practices, equipment purchases, and operational behaviors. A copy of the questionnaire is included in Appendix A.

In all, 318 workshop participants were surveyed by telephone in January 2005. Attendees from all six centers were represented, with minimum quotas of 50 participants per center. The sample frame was drawn from program records, with representation across the array of workshops offered by each center. The findings summarized in this chapter thus provide a snapshot of overall education, training, and services efforts, rather than information on any particular course or seminar.

2.2 Profile of Respondents

Most of the respondents surveyed in this research were attending the workshops as professionals rather than as energy consumers. This pattern, however, varied dramatically across the centers as summarized in Table 2.1. The proportions of end users were highest at the Agricultural Training Application Center (AGTAC) workshops and lowest and the Energy Training Center (ETC) workshops.

Table 2.1: Overview of 2003 Participants by Center

Respondent type (n)	ETC (51)	PEC (50)	AGTAC (50)	CTAC (66)	ERC (50)	SDG&E (51)
End users	7.8%	10.0%	64.0%	33.3%	24.0%	35.3%
Managers of buildings	9.8%	12.0%	22.0%	21.2%	8.0%	17.6%
Upstream market actors (Construction, design, engineering, and sales reps)	82.4%	78.0%	14.0%	45.5%	68.0%	47.1%
Non-English speaking	2.0%	2.0%	16.0%	10.6%	18.0%	7.8%

On the basis of primary language, roughly nine percent of the respondents could be classified as hard to reach. This was highest for Energy Resource Center (ERC) and AGTAC customers, lowest for ETC and Pacific Energy Center (PEC) participants.

2.3 Satisfaction

Attendee satisfaction with ETS workshops was measured by direct and indirect indicators: (1) respondents were asked to rate the workshops and their elements on scaled

satisfaction metrics; and (2) they were also asked to rate how willing they would be to recommend the workshop to a colleague.

Overall satisfaction levels are quite good for the majority of ETS workshops, with nine out of 10 participants rating their satisfaction a 4 or a 5 on a 5-point scale where 5 represented extremely satisfied. Similarly, nine out of 10 attendees would recommend the workshop they attended to a colleague. Table 2.2 summarizes these ratings for the ETS program overall.

Table 2.2: Participant Satisfaction and Willingness to Recommend Workshops

Satisfaction Indicators	Lowest		Neutral		Highest	Average Rating (std. error)
	1	2	3	4	5	
Stated satisfaction level	0.3%	1.3%	6.9%	39.0%	52.5%	4.4 (0.040)
	1.6%			91.5%		
Willingness to recommend workshop	0.9%	1.9%	7.2%	27.4%	62.6%	4.5 (0.044)
	2.8%			90.0%		

The high levels of satisfaction hold across the six centers. A comparison of satisfaction levels across centers is presented in Table 2.3.

Table 2.3: Participant Satisfaction Indicators by Center

Percent of respondents answering 4 or 5 on a 1 to 5 scale

Satisfaction Indicators	ETC (51)	PEC (50)	AGTAC (50)	CTAC (66)	ERC (50)	SDG&E (51)	Totals
Stated satisfaction level	92.1%	96.0%	84.0%	95.4%	90.0%	90.2%	91.5%
Willingness to recommend workshop	92.2%	88.0%	92.0%	92.5%	88.0%	86.3%	90.0%

To provide information as to which elements of the workshops contribute to overall satisfaction of attendees, respondents were asked to rate the following aspects of the seminars on a 5-point scale, with 1 meaning poor and 5 meaning excellent:

- Convenience of the seminar location
- Technical level of the information provided
- Clarity of the information
- Technical knowledge of the instructor
- Teaching skill of the instructor
- Usefulness of the demonstrations.

Consistent with the findings from the 2002 evaluation, attendees are generally impressed with all of the tested attributes of the workshops. All attributes were rated a four or a five by upwards of 75% of the attendees.

The strongest points overall are the strengths of the instructors, with 'technical knowledge of the instructor' and 'teaching skill of the instructor' receiving favorable ratings by nearly all attendees (98% and 96% of respondents, respectively). Table 2.4 provides the ratings for each of the attributes examined.

Table 2.4: Seminar Attribute Ratings

C3. How would you rate each of the following aspects of the course you took?

Seminar Attribute	Lowest		Neutral		Highest	Average Rating (std. error)
	1	2	3	4	5	
Convenience of workshop location (n=318)	1.9%	6.3%	17.0%	27.4%	47.5%	4.1 (0.058)
	8.2%			74.9%		
Convenience of time course was scheduled (n=316)	0.3%	1.9%	8.8%	33.5%	55.4%	4.4 (0.043)
	2.2%			88.9%		
Clarity of the information (n=317)		1.9%	6.0%	38.8%	53.3%	4.7 (0.042)
	1.9%			92.1%		
Technical knowledge of instructor (n=316)	0.3%	0.0%	1.9%	22.5%	75.3%	4.1 (0.039)
	0.3%			97.8%		
Technical level of information provided (n=318)	0.3%	1.6%	10.1%	38.4%	49.7%	4.4 (0.030)
	1.9%			88.1%		
Teaching skill of the instructor (n=317)	0.6%		3.2%	35.3%	60.9%	4.6 (0.035)
	0.6%			96.2%		

[Percentages do not sum across rows to 100% due to rounding error]

Most of the scores for the centers were very similar. The only real anomaly is the low score for ETC for the convenience of its location.

Table 2.5: Mean Seminar Attribute Ratings by Center

C3. How would you rate each of the following aspects of the course you took?

	ETC		PEC		AGTAC		CTAC		ERC		ETS	
	Mean (std err.)	N	Mean (std err.)	N	Mean (std err.)	N	Mean (std err.)	N	Mean (std err.)	N	Mean (std err.)	N
Convenience of the course location?	3.5 (.176)	51	4.2 (.128)	50	4.5 (.119)	50	4.2 (.113)	66	4.1 (.146)	50	4.2 (.133)	51
Convenience of the time it was scheduled?	4.5 (.110)	51	4.3 (.091)	48	4.6 (.090)	50	4.5 (.095)	66	4.3 (.106)	50	4.2 (.121)	51
Technical level of information provided?	4.4 (.116)	51	4.3 (.111)	50	4.4 (.100)	50	4.5 (.095)	66	4.4 (.090)	50	4.2 (.106)	51
Clarity of the information provided?	4.4 (.122)	51	4.5 (.091)	50	4.4 (.095)	50	4.6 (.084)	66	4.3 (.097)	50	4.3 (.077)	50
Technical knowledge of the instructor?	4.8 (.058)	51	4.7 (.071)	50	4.8 (.080)	49	4.8 (.075)	66	4.7 (.068)	50	4.6 (.075)	50
Teaching skill of the instructor?	4.5 (.106)	51	4.5 (.087)	50	4.6 (.075)	50	4.7 (.080)	66	4.5 (.082)	50	4.5 (.077)	50

2.4 Usefulness of Courses

In contrast to the scores above for satisfaction, the centers scored much lower when attendees were asked to rate the usefulness of the services. Table 2.6 shows that in general 30% to 40% of the attendees did not find the workshops useful in helping them decide which energy-efficient measures to take or in how to explain or sell to others the idea that energy-efficient investments would be beneficial. These results support a major finding of this evaluation that courses may need to be redesigned to focus more on achieving energy-efficiency action.

Table 2.6: Usefulness of the Workshops

Seminar Attribute	Lowest		Neutral		Highest	Average Rating (std err.)
	1	2	3	4	5	
Usefulness of demonstrations (n=302)	0.7%	0.3%	14.2%	34.8%	50.0%	4.3 (0.045)
	1%			84.8%		
Usefulness of information for making energy-using equipment purchases (n=108)	3.7%	5.6%	21.3%	44.4%	25.0%	3.8 (0.096)
	9.3%			69.4%		
Usefulness of information in helping explain to others rationale behind certain choices (n=275)	1.5%	3.3%	26.9%	42.2%	26.2%	3.9 (0.053)
	4.8%			68.4%		
Usefulness of information in helping you sell existing energy related services (n=149)	4.0%	4.7%	31.5%	36.2%	23.5%	3.7 (0.083)
	8.7%			59.7%		
Usefulness of information in helping you sell new energy related services (n=141)	3.5%	8.5%	28.4%	34.8%	24.8%	3.7 (0.088)
	12.0%			59.6%		

[Percentages do not sum across rows to 100% due to rounding error]

Table 2.7 shows the usefulness ratings broken down by center. For most ratings, CTAC values are higher than the other centers.

Table 2.7: Usefulness of Workshops Ratings by Centers

	ETC		PEC		AGTAC		CTAC		ERC		ETS	
	Mean (std err.)	N	Mean (std err.)	N	Mean (std err.)	N	Mean (std err.)	N	Mean (std err.)	N	Mean (std err.)	N
How would you rate each of the following aspects of the course you took? Usefulness of demonstrations?	4.4 (.100)	50	4.3 (.115)	46	4.5 (.102)	49	4.4 (.100)	61	4.3 (.116)	47	4.1 (.125)	49
How useful was the information... For you when making energy-using equipment purchase decisions at your facility	3.4 (.297)	7	4.0 (.471)	9	3.6 (.165)	36	4.2 (.147)	26	3.6 (.377)	9	3.8 (.225)	21
How useful was the information... In helping you explain to others in your company the rationale behind certain choices	4.0 (.149)	39	3.9 (.122)	41	3.6 (.183)	43	4.1 (.093)	56	3.8 (.119)	48	3.9 (.117)	48
How useful was the information... In helping you to better sell your existing energy- related services	3.9 (.166)	39	3.7 (.146)	31	2.6 (.510)	5	3.9 (.176)	25	3.5 (.225)	29	3.6 (.197)	20
How useful was the information... In helping you to sell new or different energy-related services	3.8 (.193)	36	3.6 (.164)	28	3.0 (.535)	7	4.0 (.141)	24	3.7 (.212)	27	3.3 (.252)	19

2.5 Evidence of Reduced Market Barriers

As in the prior evaluation, this research examined indicators that the program reduced market barriers to the adoption of energy-efficient technologies. Paralleling the approach used last year, respondents were asked to indicate the degree to which they agreed with a series of statements, beginning with the phrase, "As a result of attending the seminar…"

- I am more aware of energy-efficient solutions.
- I better understand how to improve the energy efficiency of existing equipment at my facility.
- I have more confidence in the performance of energy efficient equipment.
- I can promote energy efficiency to my own management better.
- I am more likely to specify energy-efficient equipment when I have a choice.
- I can more confidently evaluate the energy-efficiency performance claims made by salespeople.
- My company/business has or will change some of its policies related to specifying or selecting energy-efficient equipment.

Table 2.8 compares these results to results from 2002. We also added two responses that were not used in 2002. These are:

- My company can sell new or different energy-related services.
- My company is better able to sell its existing energy-related services.

Eight out of 10 participants feel that they better understand how to improve efficiency at their own facilities and are more likely to specify energy-efficient options in the future (83% and 88%, respectively). Three quarters are more aware of high-efficiency solutions and have more confidence in the performance of these products (80% and 78%, respectively).

Overall, these results were slightly higher overall to those from the prior year, except in two areas: feelings of competency in promoting energy efficiency to one's superiors and expectations of changes in company policies, the latter of which declined substantially.

Table 2.8: Comparison of 2002 and 2003 Program Effects on Market Barriers

	Percentage of 2002 participants answering 4 or 5 (n=346)	Percentage of 2003 participants answering 4 or 5 (n=318)
I am more aware of energy efficient solutions	79%	80%
I better understand how to improve the energy efficiency of existing equipment at my facility	73%	83%
I have more confidence in the performance of energy efficient equipment	75%	78%
I can promote energy efficiency to my own management better	73%	73%
I am more likely to specify energy efficient equipment when I have a choice	86%	88%
I can more confidently evaluate the energy efficiency performance claims made by salespeople	74%	73%
My company/business has or will change some of its policies related to specifying or selecting energy efficient equipment	60%	48%
My company can sell new or different energy-related services	Not asked	53%
My company is better able to sell its existing energy-related services	Not asked	63%

As Tables 2.9 through 2.11 show, these outcomes are fairly consistent across end users and facility managers. End users are somewhat less likely to come away with confidence in their ability to evaluate the performance claims made for the efficiency of various products on the market. Nonetheless, two-thirds of end users did feel better able to evaluate such claims as a result of the information received at the workshop.

Table 2.9: End-User Responses Regarding Program Influence in Reducing Market Barriers

As a result of attending the seminar ….	Strongly Disagree		Neutral	Strongly Agree		Average Rating (std. err.)
	1	2	3	4	5	
I better understand how to improve the energy efficiency at my facility (n=92)	0.0%	0.0%	18.5%	52.2%	29.3%	4.1 (0.072)
	0.0%			81.5%		
I have more confidence in the performance of efficient equipment (n=92)	0.0%	1.1%	20.7%	42.4%	35.9%	4.1 (0.081
	1.1%			79.3%		
I can promote energy efficient equipment to my own management better (n=90)	1.1%	1.1%	20.0%	37.8%	40.0%	4.1 (0.090)
	2.2%			77.8%		
I can more confidently evaluate energy performance claims (n=91)	2.2%	3.3%	24.2%	40.7%	29.7%	3.9 (0.098)
	5.5%			70.4%		
My company will change some of its policies for selecting new equipment (n=83)	3.6%	14.5%	34.9%	27.7%	19.3%	3.4 (0.118)
	18.1%			47.0%		

[Percentages do not sum across rows to 100% due to rounding error]

Table 2.10: Facility Manager Responses Regarding Program Influence in Reducing Market Barriers

As a result of attending the seminar ….	Strongly Disagree		Neutral	Strongly Agree		Average Rating (std. err.)
	1	2	3	4	5	
I better understand how to improve the energy efficiency at my facility (n=45)	0.0%	2.2%	11.1%	31.1%	55.6%	4.4 (0.116)
	2.2%			86.7%		
I have more confidence in the performance of energy efficient equipment (n=48)	2.1%	2.1%	14.6%	37.5%	43.8%	4.2 (0.132)
	4.2%			81.3%		
I can promote energy efficient equipment to my own management better (n=46)	0.0%	8.7%	17.4%	30.4%	43.5%	4.1 (0.145)
	8.7%			73.9%		
I can more confidently evaluate energy performance claims (n=48)	4.2%	4.2%	12.5%	37.5%	41.7%	4.1 (0.151)
	8.4%			79.2%		
My company will change some of its policies related to selecting new equipment (n=44)	4.5%	13.6%	34.1%	18.2%	29.5%	3.6 (0.179)
	18.1%			47.7%		

[Percentages do not sum across rows to 100% due to rounding error]

Table 2.11: Upstream Market Actor Responses Regarding Program Influence in Reducing Market Barriers

As a result of attending the seminar ….	Strongly Disagree		Neutral	Strongly Agree		Average Rating (std. err.)
	1	2	3	4	5	
I am more aware of energy efficient solutions (n=171)	2.3%	2.3%	15.8%	35.7%	43.9%	4.2 (0.072)
	4.6%			79.6%		
I have more confidence in the performance of efficient equipment (n=167)	3.0%	3.0%	17.4%	38.3%	38.3%	4.1 (0.075)
	6.0%			76.6%		
I can promote energy efficient equipment to my own management better (n=141)	4.3%	3.5%	22.7%	31.2%	38.3%	4.0 (0.090)
	7.8%			69.5%		
I am more likely to specify energy efficient equipment when I have a choice (n=165)	2.4%	0.6%	9.1%	24.8%	63.0%	4.4 (0.068)
	3.0%			87.8%		
My company has or will change some of its policies related to specifying or selecting new equipment (n=154)	6.5%	15.6%	29.2%	27.3%	21.4%	3.4 (0.095)
	22.1%			48.7%		
My company is better able to sell existing energy-related services (n=150)	7.3%	4.7%	25.3%	28.0%	34.7%	3.8 (0.097)
	12.0%			62.7%		
My company is better able to sell new or different energy-related services (n=140)	7.1%	10.7%	29.3%	31.4%	21.4%	3.5 (0.098)
	17.8%			52.8%		

[Percentages do not sum across rows to 100% due to rounding error]

2.6 Program Effectiveness

Several questions were used to examine whether the workshops are effective in causing changes in participants' energy-efficiency practices and purchasing behaviors. Specifically, the survey investigated the:

- Effect on operations and maintenance
- Effect on any purchase decisions made since the time of the workshop
- Likelihood that course information would influence future purchase decisions
- Influence on participation in utility incentive programs.

Over one-third of workshop attendees implemented operational and maintenance (O&M) changes at their facilities. Table 2.12 shows the results.

End users and building managers are equally likely to have changed their operations and maintenance practices in response to the workshops. A little less than half of each group indicated making such changes (46% of building managers and 46% of end users). Upstream market actors are less likely to have changed operations because they may have more concerns over new purchases rather than influencing clients' O&M operations.

Table 2.12: O&M Operational Changes Made after Workshop

C15. Did the [COURSE] course affect how your business operates or maintains any of its equipment?

		Upstream Actors	Building Managers	End Users	Totals
Yes	Count	47	17	35	99
	Column %	*28.7%*	*45.9%*	*46.1%*	*35.7%*
No	Count	115	18	39	172
	Column %	*70.1%*	*48.6%*	*51.3%*	*62.1%*
Don't Know	Count	2	2	2	6
	Column %	*1.2%*	*5.4%*	*2.6%*	*2.2%*
Total	Count	164	37	76	277
	Row %	*59.2%*	*13.4%*	*27.4%*	*100.0%*

While almost half of all respondents purchased new equipment since taking the course, see Table 2.13, only 38% (24 out of the 68 who purchased new equipment) of these purchasers report that the workshop had influenced them to select a more efficient item than they would have otherwise purchased. This represents 17% of all building managers and end users who attended courses.

Table 2.13: Purchases of Equipment after Attending Workshops

	Number of All Respondents (percent of all respondents) [n=144]	Number of End Users (percent of end-users) [n=93]	Number of Managers of Buildings (percent of managers) [n=49]
Purchased energy-efficient equipment after attending workshop	68 (47.2)%	52 (55.9%)	16 (32.7%)
Respondents whom the course influenced to buy a more efficient equipment	24 (16.7)%	16 (17.2%)	8 (16.3%)

A majority of participants feel that the course information will influence future purchase decisions (65%) as shown in Table 2.14. Building managers are most likely to expect future decisions to be influenced toward more efficient options (77%). End-users' and upstream actors' scores are 67% and 60%, respectively.

Table 2.14: Course Influence on Future Purchasing Decisions

C14. How influential would you say the information you received from the [COURSE] course is likely to be on your future equipment purchase decisions?

	Not at All Influential		Neutral	Very Influential		Average Rating (std. err.)
	1	2	3	4	5	
All Respondents (n=286)	6.3%	5.2%	23.4%	32.5%	32.5%	3.8 (0.067)
	11.5%			65.0%		
End Users (n=87)	6.9%	5.7%	20.7%	39.1%	27.6%	3.8 (0.121)
	12.6%			66.7%		
Managers of Buildings (n=47)	6.4%	6.4%	10.6%	34.0%	42.6%	4.0 (0.172)
	12.8%			76.6%		
Upstream Actors (n=152)	5.9%	4.6%	28.9%	28.3%	32.2%	3.8 (0.092)
	10.5%			60.5%		

[Percentages do not sum across rows to 100% due to rounding error]

Table 2.15 shows the participation of attendees in subsequent utility rebate programs. **About 11 percent of all attendees (36 of 318) and 36 percent of those participating in rebate programs (36 of 102) report subsequent participation in utility rebate programs as a direct result of their workshop attendance.** A greater number report subsequent program participation unrelated to workshop attendance. Altogether, one-third of workshop participants went on to participate in other utility programs.

Table 2.15: Participation in Utility Rebate Programs

	Frequency	Percent
Did you participate in rebate program		
Yes	102	32.1%
No	186	58.5%
Don't Know	30	9.4%
Total	318	100.0%
Did you participate in rebate program as a result of taking the course		
Yes	36	35.3%
No	66	64.7%
Total	102	100.0%

2.7 Program Marketing

This research also examined how participants learned about the workshops and contrasted these findings with those on preferred promotional methods and patterns of use of available sources of information. Respondents were asked:

- Preferred sources of information
- How they learned about the workshops
- Recommendations as to best means for notifying them about future workshops.

The findings from this research suggest that the sources of information that markets use when seeking topical information are not the same sources they would use to gather information about available workshops. While the primary sources of information used to seek out general information about energy or new technologies are trade journals, seminars, and manufacturer's reps, the recommended channels for promoting workshops are brochures and e-mail**.**

As Table 2.16 indicates, the Internet is quickly becoming a prime source of information for respondents. Almost one-half of all respondents now use the Internet for information. This is higher than trade journals and workshops. One interesting finding with respect to information gathering patterns is that **end users are more likely to rely upon utilities for general energy-related information than are property managers or upstream market actors.** Nearly one-fifth of the end users indicate that utilities are a primary information source, following the Internet and trade journals in importance.

The responses by utilities are similar to the overall means with a few notable exceptions. For instance, Table 2.17 shows that PEC respondents rely heavily on trade journals (52%) and the Internet (62%), but very little on the utilities (4%). In contrast, CTAC respondents use workshops (39%) and use the Internet less than others (30%). SDG&E

and AGTAC attendees rely on the utilities (20% and 18%), while AGTAC users are the least likely to use workshops at only 18%.

Table 2.16: Preferred Source of Information by Attendee Type—Percentage of Respondents

NP1. What sources of information do you or other decision makers at your firm prefer to use to collect information on energy efficiency or on new technologies generally? (More than one response accepted)

Preferred Sources of Information	Upstream Actors (n=176)	Building Managers (n=49)	End Users (n=93)	All Respondents (n=318)
Colleagues Inside Company	4.5%	10.2%	11.8%	7.5%
Colleagues Outside Company	6.8%	6.1%	5.4%	6.3%
Consultants	9.1%	8.2%	9.7%	9.1%
Internet	46.0%	44.9%	32.3%	41.8%
Manufacturer Reps	17.0%	14.3%	7.5%	13.8%
Seminars and Workshops	30.1%	20.4%	31.2%	28.9%
Trade journals	36.9%	20.4%	30.1%	32.4%
Utility	7.4%	8.2%	19.4%	11.0%
Others	22.7%	24.5%	23.7%	23.3%

Table 2.17: Preferred Source of Information by Center—Percentage of Respondents

(More than one response allowed)

Preferred Sources of Information	ETC (51)	PEC (50)	AGTAC (50)	CTAC (66)	ERC (50)	SDG&E (51)
Colleagues Inside Company	5.9%	4.0%	10.0%	7.6%	6.0%	11.8%
Colleagues Outside Company	7.8%	4.0%	8.0%	3.0%	4.0%	11.8%
Consultants	7.8%	10.0%	6.0%	4.5%	16.0%	11.8%
Internet	39.2%	62.0%	42.0%	30.3%	40.0%	41.2%
Manufacturer Reps	19.6%	10.0%	8.0%	16.7%	16.0%	11.6%
Seminars and Workshops	29.4%	28.0%	18.0%	39.4%	30.0%	25.5%
Trade journals	27.5%	52.0%	16.0%	27.3%	38.0%	35.3%
Utility	15.7%	4.0%	18.0%	3.0%	8.0%	19.6%
Others	29.4%	32.0%	20.0%	13.6%	20.0%	27.5%

Opinions on best course notification methods strongly favor brochures and e-mail. As seen in Table 2.18 and 2.19, these two methods were favored in nearly equal measure overall (51% vs. 49%) and far outstripped other methods in popularity. (All other methods were mentioned by under 10% of respondents.)

While, overall, the best ways to inform markets about future seminars and workshops are reported to be e-mail and brochures, preferences varied greatly from one center's market to another. E-mail is particularly favored in the areas served by ERC, PEC and SDG&E (ranging from 67% to 74%) but was far less attractive to customers served by the other three centers where no more than one-third of the market expressed a preference for e-mail notifications. Preferences for brochures also vary dramatically from AGTAC (68%) to PEC (28%).

To some degree, these stated preferences for communications channels may be linked to profession. Architects and engineering firms were disproportionately represented among the attendees at the PEC and ERC workshops; PEC and SDG&E also had the largest representation of lighting designers. The use of e-mail may be more prevalent among these professions than among others. Building managers were found to make less use of e-mail or the Internet than were upstream market actors or end users.

Table 2.18: Preferred Notification Methods by Center

C2. What would be the best way to inform you or others in your position about future [CENTER] seminars and workshops?

Preferred notification	ETC (51)	PEC (50)	AGTAC (50)	CTAC (66)	ERC (50)	SDG&E (51)	All Respondents
E-mail	33.3%	70.0%	32.0%	24.2%	74.0%	66.7%	48.7%
Brochure	47.1%	28.0%	68.0%	65.2%	46.0%	45.1%	50.6%
Internet	7.8%	12.0%	4.0%	6.1%	2.0%	9.8%	6.9%
Fax	3.9%	2.0%	4.0%	0%	2.0%	2.0%	2.2%
Trade journals	3.9%	2.0%	0%	0%	4.0%	2.0%	1.9%
Professional Organizations	3.9%	0%	0%	0%	4.0%	3.9%	1.9%
Utility rep	2.0%	0%	0%	1.5%	2.0%	2.0%	1.3%
Utility bill	2.0%	0.0%	0.0%	0.0%	4.0%	0.0%	0.9%

Table 2.19: Preferred Notification Methods by Attendee Type

Preferred notification	Upstream Actors (n=176)	Building Managers (n=49)	End Users (n=93)
E-mail	50.6%	38.8%	50.5%
Brochure	47.2%	51.0%	57.0%
Internet	10.8%	0.0%	3.2%
Fax	1.7%	6.1%	1.1%
Trade journals	2.3%	2.0%	1.1%
Professional Organizations	1.7%	2.0%	2.2%
Utility rep	1.0%	4.1%	1.1%
Utility bill	0.6%	0.0%	2.2%

With respect to program marketing, brochures were generally the most important sources of workshop information to 2003 attendees. In the area served by ERC, professional organizations were the most important source of workshop information. E-mail and the Internet were also especially important in the SDG&E area. Table 2.20 provides a summary of recollections about notifications.

Table 2.20: Means by Which Participants Learned of Workshops

C1. How did you hear about the [CENTER] and the seminars/workshops they offer? Where else? (Multiple responses permitted.)

Recalled notification	ETC	PEC	AGTAC	CTAC	ERC	SDG&E
E-mail	3.9%	18.0%	4.0%	6.1%	12.0%	29.4%
Brochure	39.2%	28.0%	44.0%	42.4%	20.0%	35.3%
Internet	7.8%	8.0%	4.0%	10.6%	8.0%	19.6%
Fax	0%	2.0%	4.0%	0%	2.0%	0%
Trade journals	2.0%	2.0%	0%	1.5%	4.0%	2.0%
Professional organizations	7.8%	14.0%	2.0%	0%	24.0%	2.0%
Utility rep	5.9%	2.0%	4.0%	4.5%	6.0%	17.6%
Someone at my company	5.9%	14.0%	20.0%	28.8%	18.0%	2.0%
Colleague outside my company	3.9%	12.0%	10.0%	3.0%	18.0%	2.0%
Other not specified	33.3%	20.0%	18.0%	10.6%	10.0%	17.6%

Finally, we asked respondents to gauge how long it took them to get to the seminar. Responses are shown in Table 2.21. The attendees at PG&E-ETC traveled the furthest; not surprisingly, the SDG&E attendees traveled the least.

Table 2.21: Mean Responses on Travel Time and Distance

	C8a. How long did it take you in minutes to travel to the seminar? (std. err.)	C8b. Approximately how many miles was that? (std. err.)
Energy Training Center (n=51)	108 (12.0)	85 (10.9)
Pacific Energy Center (n =50)	44 (5.7)	27 (4.4)
AGTAC (n =50)	54 (7.0)	52 (8.4)
CTAC (n=65)	47 (3.9)	36 (3.7)
Energy Resource Center (n=50)	47 (6.2)	47 (18.5)
Energy Training Seminars (n=51)	30 (2.9)	26 (6.9)
Total (n=317)	55 (3.0)	45 (4.0)

3 Pacific Energy Center: Tool Lending Library Case Study

3.1 Introduction

3.1.1 Background

The Pacific Energy Center's (PEC's) Tool Lending Library (TLL) is a Public Goods Charge-funded program that loans tools free of charge to people working on short-term energy-efficiency projects in California. The tools are lent to building operators, designers, and researchers who need short-term use of measurement and monitoring equipment. Major uses of the tools are for building diagnostics, site analysis, power and energy consumption, research, and education. A major component of the TLL is the technical assistance provided to potential borrowers both in selecting the right tools, operating them correctly, and specifying measurement protocols that will give the borrower the answers to the questions they have posed.

Through its classes and services, the PEC attempts to remove the market barriers that prevent customers from implementing energy-efficiency measures due to (1) lack of information, (2) the high cost of research (time and money), and (3) insufficient documentation of results (case studies). Overcoming market barriers to the flow of credible information to decision makers in the building professions has been the goal of the PEC for over a decade. The PEC links knowledge generators, innovators, and new energy service providers from research, manufacturing, and business communities to the real world of design and operation of buildings. In addition to the TLL, the PEC provides the following services and programs:

- Educational programs that create awareness and provide how-to examples of efficient design and operation for designers and building operators
- Electric lighting and heating, ventilation, and air conditioning (HVAC) equipment demonstrations
- Architectural consultations
- The Resource Library/Energy Information Clearing House
- The PEC facility, which hosts over 500 energy-efficiency meetings each year.

3.1.2 Case Study Objectives

The major focus of this study is to review the operations of the TLL, with particular emphasis on estimating the energy savings of projects that utilized the TLL. The PEC is funded as a local program and must therefore compete with other proposals for funding. This has put pressure on the PEC to provide quantitative evidence of its effectiveness in getting participants in the center's activities to save energy. The PEC determined that calculating the energy saved by the TLL would be a productive case study.

Quantifying these contributions is a daunting task, one that is framed in qualitative and subjective information. Nevertheless, we formulated a strategy that will give a reasonable

assessment of the importance of the TLL to PG&E's overall energy-efficiency program. The strategy began with a thorough examination of the TLL process. This is necessary to understand how the TLL works, what are its objectives in offering tool lending, and how effectively it accomplishes the goals it has set for itself. We then initiated a survey of participants to determine who actually implemented projects after using the tools. We asked these people to estimate how much was saved by the project. Finally, we had a senior researcher contact some of the respondents with the largest savings to substantiate the savings estimates and to clarify the role the tools played in the projects' implementation.

3.1.3 Section Layout

The remainder of this section consists of seven subsections as follows:

- Description of the TLL Services
- Case Study Methodology
- Results of Internal Interviews
- Results of Borrower Survey
- Estimates of Energy Saving
- Interest in Tool Lending Library
- Summary and Recommendations.

3.2 Description of the TLL Services

The TLL was started in 1994, soon after the PEC was formed. It has grown over the years, increasing both the number and varieties of tools that it has in inventory and also the number of tools lent per year. Figure 3.1 shows the historic growth of the TLL.

In 2003, the TLL processed 513 separate projects, 471 of which are external to PG&E staff use. A categorical summary of these loans is shown in Table 3.1. (The database sometimes used more than one loan category for entries under the same project number. When the PEC database had more than one entry for a project and the loan category did not agree, we selected that loan category with the most entries to represent that project number.

Figure 3.1: Tool Lending Library's 10-Year Monthly Loan Activity

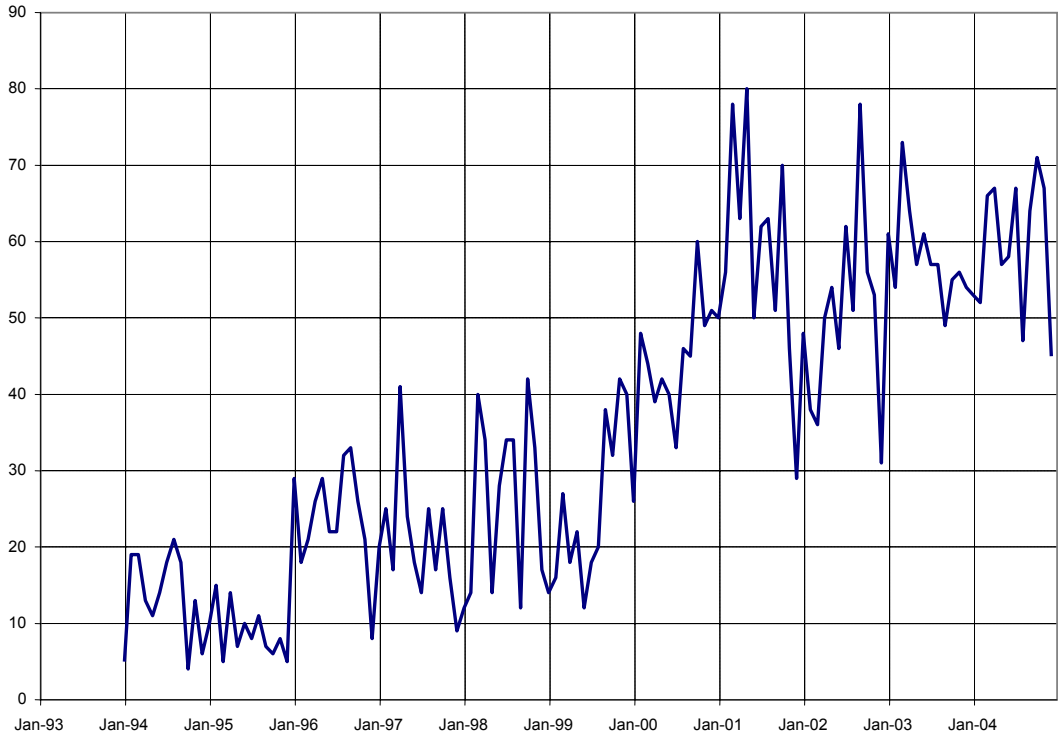


Table 3.1: Categorical Summary of TLL Projects in 2003

Loan Category	Outside Projects	PG&E Projects	Total Projects
Commercial Power and Energy	145	0	145
Equipment Diagnostics	96	0	96
Research	46	0	46
Site Analysis	43	1	44
Illuminance Study	40	1	41
Educational	26	33	59
Envelope Analysis	19	2	21
Unclassified	16	4	20
Residential Power and Energy	12	0	12
PV/Solar Hot Water	9	0	9
Electrical system analysis	8	1	9
Comfort	6	0	6
Tool Evaluation	5	0	5
Totals	471	42	513

3.3 Case Study Methodology

This case study involved three activities:

- Interviews with key PEC staff
- Survey of 104 TLL users external to PG&E
- Follow-up interviews with 11 survey respondents who claimed large energy savings
- Survey of 277 course attendees from all six of the centers to gauge potential demand for TLL services.

A survey was conducted with the non-PG&E users of the TLL. In total surveys were completed with 104 participants. The sampling approach involved a simple random sample of the 471 projects. Table 3.2 shows the disposition of the survey. The survey instrument is attached as Appendix B.

Table 3.2: Survey Disposition

	Number
Total Projects Excluding PG&E Staff	471
Completes	104
Total Unresolved	65
Non-Working Number	11
Ineligible	40
Not Available for Duration	5
Other	7
Terminate (Did not recall attending)	2

Eleven people, representing the top 11 energy savers, were interviewed by the evaluation team to substantiate the savings estimates and to clarify the role the tools played in the implementation process.

3.4 Results of Internal Interviews

3.4.1 Objectives of the TLL

According to the TLL Coordinator, the TLL is designed to assist building technicians and design professionals. These objectives are:

- Provide tools to building operators to help them make buildings operate more efficiently. Much of that focused on retrofit of controls and equipment operations
- Provide tools to support site analysis and building design support, which is a primary service provided by PEC
- Support other energy-efficiency programs, such as help in verification of savings.

The Director wants to grow the lending capacity steadily, but understands that ramping up library will be difficult because of the intensity of the technical support and handling

required. While the name library gives the impression of a straightforward process, like a library that lends books, lending tools is far more involved. To be effective the TLL must be sure that each borrower knows how to operate the tools and use them in a way that produces the needed measurements. In addition, the tools require constant maintenance to be sure they are working properly and are correctly calibrated. The TLL staff understands that they need to be prepared for future growth rather than just react to it when it comes. Therefore, the priority has been to build the infrastructure. This has centered on two main areas: electronic communication through webpage, e-mail, and an on-line application and web-based support for users when they have the tools through development of application pages.

The PEC believes that it is in the interest of the PEC and the TLL to give the TLL its own budget. They realize that to do this they must build up support that justifies the TLL program. They have encouraged this case study to provide documentation of the TLL's value. They are also initiating their own study to verify the savings claims made by some of the largest projects. This study is planning on independently measuring and/or calculating energy saved at three or four sites.

3.4.2 Staffing

The TLL is staffed by two full-time persons and a supervisor, who also has other responsibilities at the PEC. The two full-time administrators are the TLL Coordinator, who manages day-to-day operations, and her Technical Program Assistant. The TLL's management supervisor used to be the TLL Coordinator in the early program years but has moved on to a larger role in the management of the PEC. As the supervisor of the TLL, he helps set policy, supports the technical assistance needs of the TLL, and handles much of the outreach.

The current TLL Coordinator has been at the TLL for the past 4-1/2 years. As her knowledge of the tools has grown, she has assumed more responsibility for providing technical assistance to borrowers. Over the past year, she has helped develop technical assistance support materials, particularly the new TLL website, which includes descriptions of the tools, advisories on how to operate them, and an on-line application process. Other responsibilities that she shares with her assistant include the purchase of equipment, cataloging equipment, answering customer questions, logging in and out tool loans, mailing tools to users, and repairing equipment.

3.4.3 The TLL Web Site

Over the last year, a major goal of the TLL has been to build on-line capabilities so as to streamline the loan process and reduce technical assistance so that the existing staff can handle more loans.

The website gives the viewer access to the TLL services and all of the technical information assembled by the TLL team. From the TLL home page visitors can:

- Register for tools on line
- Register for courses offered by the PEC and the PG&E ETC in Stockton

- Find application notes on descriptions of different tools and on measurement techniques
- Get contact information for TLL staff
- Find links to other relevant information.

3.4.4 Marketing

The TLL wants to expand its tool lending but is cognizant that growth must be managed. Goals for the TLL are to do an additional 200 loans in 2004 and in 2005 to increase another 200 above the 2004 level. Achieving these growth figures will require some form of increased marketing. However, as the TLL management understands, too rapid growth will create budget and personnel issues. The TLL also wants to make sure that marketing attracts the best candidates for tool lending. They are looking for users with big energy saving potential. An individual homeowner with little understanding of energy issues could consume a good deal of their available time for very small energy savings. Therefore, most of their outreach is targeted to building operators, engineers, and design professionals.

While word of mouth remains the biggest source of introduction to the TLL, the classes offered by the PEC are an important conduit to the TLL. These courses have the added advantage of bringing informed users to the TLL. The PEC makes it a practice to have relevant courses include a segment on tools. There is even a full course offered that describes the various energy measurement tools.

To expand its reach, the TLL is involved in additional outreach. It is hoped that the new TLL webpage will bring in new borrowers. The TLL has been reaching out to PG&E customer representatives to make sure that they know how the TLL can assist them in their jobs. The other way that the TLL markets is by attending selected events. The TLL has determined that events that focus on energy efficiency or facilities operations are useful, while events covering broad general business areas or groups are not very productive. To help reach these audiences, the TLL is producing a new brochure that will describe the TLL services graphically. Some consideration was being given to advertising in some publications that reach the targeted audiences.

3.4.5 Operational Issues

While the TLL still handles phone inquiries and applications, it is encouraging everyone to use the web-based application. This not only reduces the staff time required, but leads to quicker turnaround as the on-line application requires that all information that is needed is submitted. The TLL also now responds to all inquiries via e-mail, unless the response would be too confusing. Borrowers are also encouraged to look at the supporting documents before posing questions to the staff.

The typical questions posed by potential borrowers differ depending on their training and experience. For the most sophisticated borrowers, there may be no questions. The least knowledgeable borrowers usually come with a measurement problem, such as “I need to figure out how much energy I would save if I …” The TLL does not just loan these

people tools, but works with them to refine the question and develop a measurement protocol. Then the TLL gives them a set of tools that will deliver the data needed.

As our survey confirms, virtually all of the users of the service are pleased with the TLL. The TLL does not receive much negative feedback. The only issue seems to be the desire by some to have a branch near them. However, opening branches would be a very expensive proposition. It would add large overhead expenses without improving service to most people. As it is, the TLL ships most of its tool orders, with borrowers paying the postage in both directions.

The TLL purchases tools from the normal channels. They do not receive anything more than a normal volume discount, but they do receive good technical support from the manufacturers. They are cognizant of the tool manufacturers' interests in wanting to sell tools and will not repeatedly loan tools to the same organization. They also try to purchase tools from a variety of manufacturers so as to not show favoritism. However, there are situations where a specific tool fits a specific need and works easier and better than other tools. In these cases, it is hard for the TLL to not keep specifying that tool. When possible, they use PG&E's free internal mail system; sometimes an account representative will pay the delivery charges for a customer.

Given the value of the tools and hassles involved in shipping the equipment back to the PEC, one would expect there to be issues with getting the equipment back. This is certainly an issue with library books. Surprisingly, this has not been an issue for the TLL. They rarely have to hound borrowers to return the equipment. The borrower does have to sign a legal document, but the TLL does not do any screening before lending. This remarkable return record is probably an indicator of the professionalism of the firms seeking the tools and a measure of how much they value the TLL service.

3.5 Results of Borrower Survey

To gauge the opinions of borrowers, we surveyed 104 unique borrowers by telephone. Our goal was to limit our surveys to only one borrower per firm; ultimately however, multiple interviews were completed at eight firms. The questionnaire used for this survey is found in Appendix B.

3.5.1 Purpose for Borrowing Tools

The first set of questions asked respondents to characterize the reason for borrowing the tools. Table 3.3 indicates that almost a third borrowed the tools to "obtain general information about equipment in my building," and another 25% borrowed tools to measure energy use/energy intensity of existing equipment.

Table 3.3 Reason for Borrowing Tools

Question P2: Which of the following purposes best describes the reason you borrowed the tools

	Frequency (n=104)	Percent
To obtain general information about equipment in my building, such as to solve a particular operational problem at my building or to establish a baseline use.	30	29%
To measure energy use/energy intensity of existing equipment that I wanted to see if it made sense to replace...	27	26%
To do site analysis for a new building or for measuring the feasibility of new equipment such as a photovoltaic system	18	17%
For research purposes.	16	15%
To confirm energy savings/use/ intensity of new equipment I recently installed...	8	8%
To test the operation of a piece of equipment I am thinking of purchasing	4	4%
Other (requirement for rebate)	1	1%
Total	104	100%

3.5.2 Familiarity with Tools Borrowed

Respondents were asked to assess the degree to which they were familiar with the tools they were borrowing. TLL offers support both through in-person instruction at the PEC, and through e-mail and Web resources. Table 3.4 shows the borrower's familiarity with the tools, and Table 3.5 shows a cross-tabulation of tool familiarity with reasons for borrowing the tools. The intended uses for which the most help was needed were site analysis and to test the operation of a piece of equipment, where half of the respondents in those categories (columns five and six) needed a quick overview or detailed instruction. Those borrowing tools to measure energy use of existing equipment also needed assistance 44% of the time, (22% needed a quick review and 22% needed detail instructions)..

Table 3.4: Familiarity with Tools Borrowed

Question P3. Before the loan of the tools from the lending library, how familiar were you with the operation of the tools you borrowed?

	Frequency	Valid Percent
I had used the equipment before, and needed no instruction on how to use it....	46	44%
I had never used such a tool, but needed only a quick overview on how to operate the equipment.	19	18%
I had never used such a tool, but its operation is so simple that I did not need any assistance.	17	16%
I had never used such a tool, and needed detailed instructions on how to use it properly.	14	14%
I had used this tool or ones like it before, and only needed a quick refresher on how to operate the equipment.	8	8%
I had used this tool before, but still needed detailed instructions on how to use it properly.	0	0%
Total	104	100%

Table 3.5: Cross-Tabulation of Familiarity with Tools Borrowed and Reason for Borrowing Tools

	I had used the equipment before, and needed no instruction	I had used this tool or ones like it before, and only need quick overview	I had never used such a tool, but its operation is so simple	I had never used such a tool, but needed only a quick overview	I had never used such a tool, and needed detailed instruction
To measure energy use/energy intensity	11 (40.7%)	0 (0%)	4 (14.8%)	6 (22.2%)	6 (22.2%)
To do site analysis	8 (44.4%)	1 (5.6%)	0 (0%)	3 (16.7%)	6 (33.3%)
To confirm energy savings/use	5 (62.5%)	1 (12.5%)	0 (0%)	2 (25%)	0 (0%)
To test the operation of a piece of equipment	1 (25%)	0 (0%)	1 (25%)	1 (25%)	1 (25%)
To obtain general information about equipment	13 (43.3%)	3 (10%)	8 (26.7%)	5 (16.7%)	1 (3.3%)
For research purposes	8 (50%)	3 (18.8%)	4 (25%)	1 (6.2%)	0 (0%)
Don't Know	0 (0%)	0 (0%)	0 (0%)	1 (100%)	0 (0%)
Totals	46 (44.2%)	8 (7.7%)	17 (16.3%)	19 (18.3%)	14 (13.5%)

[Percentages are for each row and sum across rows to equal 100%. Percentages do not sum across rows to 100% due to rounding error]

3.5.3 Value of Training Received

The respondents were asked if they received the training that they needed. As shown in Table 3.6, two people said they did not receive the training they needed on proper operation. One was using a light meter, which he had used before but needed a quick refresher. The other was measuring the volumetric airflow, dry-bulb temperature, and relative humidity of a number of room air conditioning units to calculate the effective energy-efficiency rating, something that was new to the user, and needed a quick overview on how to operate the equipment.

Table 3.6: Did You Receive the Training You Needed

Question P4: Did you receive the training you needed on the proper operation of these tools from the Pacific Energy Center Staff?

	Frequency	Valid Percent
Yes	39	95%
No	2	5%
Total	41	100%

The respondents were then asked to rate the training that they received. Table 3.7 shows that 90% of the respondents found the help received either important or extremely important.

Table 3.7: How Important Was the Assistance You Received

Question P5: On a scale of 1 to 5, with 5 being extremely important, and 1 being not at all important, how important was the assistance you received in the use of the equipment?

	Frequency	Valid Percent
Not at all important	0	0%
Not important	1	3%
Neutral	3	8%
Important	14	36%
Extremely Important	21	54%
Total	39	101%

[Percentages do not sum down columns to 100% due to rounding error]

3.5.4 Project Implementation Status

We next recorded whether the project for which the tools were borrowed was ever implemented. Table 3.8 shows that 57% of the projects were implemented.

Table 3.8: Did Project Get Implemented as a Result of Tool Lending

Question P7: Overall, as a result of all tools you borrowed in 2003, did you go on to implement any energy saving measures as a result of tool lending?

	Frequency	Valid Percent
Yes	59	57%
No	45	43%
Total	104	100%

Respondents were then asked the likely results of the project if the tools were not available from the TLL. In Table 3.9, we break down these answers by whether or not the

project was completed. Table 3.9 indicates that only 25% would have proceeded directly without the tools available. A little more than 30% of the projects would not have been implemented if the tools were not available. For the remaining 44% of the implemented projects, most feel they would have completed the jobs, but they would have been forced to buy or rent the tools or hire a firm to do the measurement work (see Table 3.9).

Table 3.9: Likely Result if PEC Tool Lending Library Were Not Available

Question P6. If the tools you borrowed were not available from the PEC Tool Lending Library, what would you have likely done as a result?

		Did Implement	Did Not Implement	Total
Done without it and likely not proceeded with the project	n	18	13	31
	Row %	*58.1%*	*41.9%*	*100.0%*
	Col %	*30.5%*	*28.9%*	*29.8%*
Done without it, and likely proceeded with the project	n	15	9	24
	Row %	*62.5%*	*37.5%*	*100.0%*
	Col %	*25.4%*	*20.0%*	*23.1%*
Purchased the equipment	n	12	6	18
	Row %	*66.7%*	*33.3%*	*100.0%*
	Col %	*20.3%*	*13.3%*	*17.3%*
Rented it from a commercial firm	n	4	7	11
	Row %	*36.4%*	*63.6%*	*100.0%*
	Col %	*6.8%*	*15.6%*	*10.6%*
Borrowed it from somewhere else	n	4	6	10
	Row %	*40.0%*	*60.0%*	*100.0%*
	Col %	*6.8%*	*13.3%*	*9.6%*
Don't Know	n	4	3	7
	Row %	*57.1%*	*42.9%*	*100.0%*
	Col %	*6.8%*	*6.7%*	*6.7%*
Hire outside company	n	2	1	3
	Row %	*66.7%*	*33.3%*	*100.0%*
	Col %	*3.4%*	*2.2%*	*2.9%*
Total	n	59	45	104
	Row %	*56.7%*	*43.6%*	*100.0%*

We wanted to determine why projects were not implemented. The biggest reason (33%)

that projects were not implemented is that there was no project to begin with. Table 3.10 shows that most of the remaining unimplemented projects still have the possibility of being implemented in the future.

Table 3.10: Why Was Project Not Implemented

Question P7a. Why didn't you implement any energy saving measures as a result of the tool lending?

	Frequency	Percent
No project to implement/Project already implemented tools were for verification/ Tools were for research	15	33.3%
Didn't get approval for the project	5	11.1%
Recommended project to client, but they have not implemented	5	11.1%
Don't Know	5	11.1%
Haven't gotten around to it but plan to	3	6.7%
Still unsure/haven't decided yet	3	6.7%
Wasn't cost effective/not enough savings	3	6.7%
Didn't have the money	2	4.4%
Used to get existing equipment to work correctly	2	4.4%
Other	2	4.4%
Total	45	99.9%

[Percentages do not sum down columns to 100% due to rounding error]

The record shows in Table 3.11 that the TLL is generating numerous projects that are not part of other utility energy-efficiency programs. Of the 59 projects implemented, 35 were not part of any other utility or government program. It also appears that a couple of the projects listed by respondents in Table 3.12 are not connected to Public-Goods-Charge funding (NREL and the Wastewater projects).

Table 3.11: Was Project Part of Government or Utility Program

Question P8. Was the project you implemented part of any utility or government energy efficiency program?

	Frequency	Valid Percent
Yes	24	41%
No	35	59%
Total	59	100%

Table 3.12: Programs for Which Tools Were Used

	Frequency
Standard Performance Contract	4
Express Efficiency	3
California Energy Commission Oakland Energy Project	3
PG&E Efficiency Program	2
Department of Energy Lighting Study	1
California Energy Commission Photovoltaic Rebate	1
National Renewable Energy Laboratory	1
PG&E Codes And Standards	1
SDG&E	1
California Energy Commission.	1
Savings By Design	1
Energy Renewable Program	1
California Energy Pier	1
Chiller Analysis Program	1
California Wastewater Process Optimization Program	1
Design For Comfort	1

A final implementation status question focused on the areas in which the projects were implemented. Table 3.13 shows that projects were implemented across a wide set of end-uses.

3.5.5 Satisfaction Ratings with TLL

TLL users were asked to rate their overall satisfaction with the TLL. Table 3.14 indicates that all of the respondents were at least satisfied with the TLL experience, with 86% saying they were extremely satisfied.

Table 3.13: End-uses Where Projects Were Implemented

Question P10: In which of the following areas were the measures you implemented focused? [READ LIST. ACCEPT MULTIPLE RESPONSES]

Project End-use	Number of Projects Implemented	Percent of All Projects Implemented (column 1 divided by 59)	Percent of Projects in Specific Project End-use that Were Implemented Independently of Utility or Government Program
Lighting	23	39%	35%
HVAC	29	49%	36%
Building Control	9	15%	56%
Water Heating	7	12%	0%
Motors, Pumps	8	14%	25%
Industrial Process	6	10%	67%
Process Control	3	5%	33%
Refrigeration	7	12%	0%
Solar	3	5%	67%
Other, Appliances, Daylighting, Home Entertainment/ Computers	3	5%	67%

Table 3.14: Overall Satisfaction with Tool Lending Library

Question P20. On a scale of 1 to 5 with 5 being "extremely satisfied" and 1 being "not at all satisfied," how would you rate your overall satisfaction with the Tool Lending Library experience?

	Frequency	Valid Percent
Not at all Satisfied	0	0%
Not Satisfied	0	0%
Neutral	0	0%
Satisfied	15	14%
Extremely Satisfied	89	86%
Total	104	100%

We asked each respondent whether they would recommend the TLL to others. Table 3.15 indicates that all but one responded as likely or extremely likely to recommend TLL to others.

Table 3.15: Likelihood of Recommending TLL to Others

Question P21. On a scale of 1 to 5 with 5 being "extremely likely" and 1 being "not at all likely," how likely would you be to recommend the Tool Lending Library to a friend or colleague?

	Frequency	Valid Percent
Not at all Likely	0	0%
Not Likely	0	0%
Neutral	1	1%
Likely	5	5%
Extremely Likely	98	94%
Total	104	100%

One of the services provided by TLL is technical assistance. Table 3.16 indicates that only 20% of respondents felt they received technical assistance. TLL offers several kinds of technical assistance, including tool specification, tool operations, and measure protocol development; and they offer these services in several ways, including via telephone, in person, and their website. We asked users whether they received technical assistance without specifying specific types or means, so respondents used their own definitions of technical assistance in replying. Some may have not considered the telephone advice or web information they obtained as receiving technical assistance.

Table 3.16: Did You Receive Technical Assistance

Question P22. Did you receive any technical assistance from the staff at the PEC in formulating the right set of measurement protocols to obtain the answers to your energy saving/use questions

	Frequency	Percent
Yes	21	20%
No, I did not need it	82	79%
No, I was not offered it	1	1%
Total	104	100%

Table 3.17 shows that of the 21 persons who say they received technical assistance, all but one found it useful or extremely useful.

Table 3.17: How Useful Was the Technical Assistance

Question P23: On a scale of 1 to 5, with 5 being "extremely useful," and 1 being "not at all useful," how useful was the technical assistance you received?

	Frequency	Valid Percent
Not at all Useful	0	0%
Not Useful	0	0%
Neutral	0	0%
Useful	5	25%
Extremely Useful	15	75%

3.6 Estimates of Energy Saving

The major objective of this case study is to attempt to estimate how much energy is saved because of the existence of the TLL. For each identified project, it is possible to measure savings using the same methods approved for typical rebate programs: deemed savings based on engineering measurement and assumptions, billing analysis, and monitoring. For the TLL, it is likely that the deemed savings approach will be at least as accurate as when deemed savings is used in the rebate programs. One real benefit of the TLL is that the tools themselves provide more accurate measures of current use and saving potential.

We present these energy savings estimates with the caveat that the task of attributing savings to an education program is difficult: Customers are influenced by many sources of information and education before they purchase any energy efficient equipment. Because of this, the energy savings we have estimated cannot be attributed solely to the TLL and should not be used as the sole indicator of the program's value.

The greater uncertainty facing the centers is the assignment of causality. This issue is not unique to the centers, although it may be even more problematic to determine a center's contribution to an energy-saving project than it is to determine such for a rebate program. How much credit does a center deserve if it was responsible for providing the initial awareness or the skills needed to carry out the project? How do we share allocation when the tools lent ensured the implementation of a project that collected a rebate?

Because these questions remain unsettled, we have chosen to describe in as much detail as possible the savings record of the 59 respondents who implemented projects after using the TLL. We believe that this approach provides the fullest and most accurate assessment of the value of the TLL.

3.6.1 Survey Responses on Savings

Project Costs

First, each respondent with an implemented project was asked to state how much was spent on the project. There were 44 projects where the respondent knew the amount of money spent, ranging from $50 to $90,000,000. Unfortunately, some projects involved new construction in which the energy component was a portion of the overall project.

Several of the responses, particularly among the highest cost projects, involve new construction, and these cost estimates seem to include the entire cost of the project and not the incremental energy expenses. As shown in Table 3.18, with all projects included, the median amount was $30,000 and the mean amount was $2,820,333.

Table 3.18: Investment and Payback for Implemented Projects

Question P11. How much money did you spend on the project(s)?
Question P13. On an annual basis, how much money do you expect to save from this project? Question P15. On an annual basis, how many kilowatt-hours do you expect to save from this project? Question P17. On an annual basis, how many therms do you expect to save from this project? Question P19. On an annual basis, how many kilowatts do you expect to save from this project?

	P11—Cost of Investment	P13—$ Saved/year	P15—kWh Saved/year	P17—therms Saved/year	P19—kW Saved
Number Valid	44	29	18	0	7
Number Missing	60	75	86	104	97
Mean	$2,820,333	$68,929	1,155,129		43,667
Median	$30,000	$3,824	85,618		90
Std. Deviation	$13,695,141	$198,888	2,564,876		113,044

Reported Project Savings

Annual dollars-saved figures were obtained from 29 respondents and two more were calculated from their kWh responses. The values ranged from $3 to $1,000,000 per year. The average savings was $68,929 with a standard deviation of $198,888, and the median savings was $3824.

The savings figures for the respondents are shown in Table 3.19. The 11 borrowers who reported the most savings from TLL in 2003 were interviewed in detail. For each of them we confirmed the savings figure and ascertained whether the value was calculated from an engineering estimate or from billing analysis. Each respondent was also questioned about the importance of the tools in the implementation of the project. Table 3.20 shows those responses.

The testimonials supplied in Table 3.20 indicate that the TLL is responsible for many projects being implemented. The tools define the baseline use from which savings can be generated, build confidence in the savings estimates, provide graphic evidence to secure management's approval of projects, give more accurate feedback that allows equipment to be operated more efficiently, and they verify actual savings when new equipment is installed.

Table 3.19: Saving Responses for TLL Borrowers With Known Savings

Investment Amount	Projects Where New Construction Involved – Cost Estimate Includes Non-Energy Expenses	Savings Amount Per Year	Payback in Years.	What Would Have Done if TLL Was Not Available	Utility or Government Project
$1,000,000	No	$1,000,000	1	Done Without, Not Proceed	Y
$85,000	No	$500,000	0.2	Done Without, Not Proceed	Y
$15,000,000	Yes	$250,000	60	Purchased	Y
$3,000	No	$104,000	0.03	Rented	N
$40,000	No	$80,000	0.5	Purchased	N
$200,000	No	$40,000	5	Done Without, Not Proceed	Y
$48,000	No	$27,000	1. 8	Done Without, Not Proceed	Y
$50,000	No	$25,000	2	Borrowed	Y
$25,000	No	$22,000	1.1	Don't Know	Y
	?	$17,000	.	Hired	N
$50,000	No	$15,000	3.3	Done Without, Proceed	Y
$300,000	?	$10,000	30	Purchased	Y
$10,000	No	$7,500	1.33	Done Without, Proceed	N
$20,000	No	$7,000	2.86	Done Without, Proceed	Y
$20,000	No	$6,500	3.08	Done Without, Proceed	N
$90,000	?	$3,824	23.5	Purchased	Y
$1,500,000	Yes	$3,000	500	Done Without, Proceed	N
$100	No	$3,000	0.03	Done Without, Proceed	N
$10,000	?	$2,400	4.2	Purchased	N
$500,000	Yes	$2,000	250	Don't Know	N
$36,000	?	$2,000	18	Purchased	Y
$10,000	?	$2,000	5	Done Without, Not Proceed	Y
$200	No	$2,000	0.1	Done Without, Not Proceed	N
$14,000	?	$1,500	9.3	Done Without, Proceed	Y
$1,200	?	$1,200	1	Hired	N
.		$1,200	.	Rented	N
.		$1,000	.	Borrowed	N
$6,000	?	$350	17.1	Purchased	Y
$11,000	?	$300	36.7	Purchased	Y
$100	No	$25	4	Done Without, Not Proceed	N
$50	No	$3	16.7	Done Without, Not Proceed	N
Totals		$2,136,802			

Table 3.20: Detailed Information on Largest Energy Savers

	Investment Amount	Savings Amount Per Year	Payback in Years.	What Would Have Done if TLL Was Not Available	Utility or Government Project
Case 1	$1,000,000	$1,000,000	1	Done Without, Not Proceed	YES
Purpose: Monitor HOU and machine run-times				Savings Estimate: Engineering estimates	
Comments: "Client could not afford to buy tools; project would not have proceeded without tools."					
Case 2	$85,000	$500,000	0.2	Done Without, Not Proceed	YES
Purpose: Calibrate temperature sensors				Savings Estimate: Based on billing analysis	
Comments: "Helped assess current conditions and verify savings. Tools were definitely an important part of getting work done. Management might have given go ahead without the detailed measurements, but I can't be sure. Now have bought CO2 monitors keeping equipment operating efficiently. "					
Case 3	$15,000,000	$250,000	60	Purchased	YES
Purpose: Lighting levels				Savings Estimate: Engineering , costs include other major expenses	
Comments: "Surface reflectance tools, we would never buy. They allowed better calibration which saved work and verified existing levels. Without tools we would have made different decisions and lost 30% of the savings."					
Case 4	$3,000	$104,000	0.03	Rented	NO
Purpose: Monitor data center power and power factor.				Savings Estimate: Engineering assumptions	
Comments: "We would have rented equipment but that would have cost around $12,000 ($3000/wk). Those places that do rent equipment are very expensive and valuable equipment is often not available."					
Case 5	$40,000	$80,000	0.5	Purchased	NO
Purpose: Run-time wastewater treatment facility				Savings Estimate: Billing analysis	
Comments: "Tools were pretty important. We would have purchased tools but that would have delayed project, with tools job got done much easier."					
Case 6	$200,000	$40,000	5	Done Without, Not Proceed	YES
Purpose: Monitor run-time for SPC project				Savings Estimate: Engineering/Verification	
Comments: "Verification-no savings for this project"					
Case 7	$48,000	$27,000	1. 8	Done Without, Not Proceed	YES
Purpose: Walk thru audit, HOU monitoring				Savings Estimate: Lighting with monitored hours-of-use	
Comments: "Needed measurements to help quantify savings and get management's approval"					
Case 8	$50,000	$25,000	2	Borrowed	YES
Purpose: Baseline 250 HP Compressor				Savings Estimate: Engineering assumptions	
Comments: "Could not have done job without tools, probably would not have done projects if TLL were not available."					
.Case 9	$25,000	$22,000	1.1	Don't Know	YES
Purpose: Monitor electric bus usage				Savings Estimate: Engineering assumptions	
Comments: "Without TLL we would have probably waited several months for tools to become available"					
Case 10		$17,000	.	Hired	NO
Purpose: Monitor chiller load				Savings Estimate: Engineering estimate	
Comments: "Had to have tools to validate the savings"					
Case 11	$50,000	$15,000	3.3	Done Without, Proceed	YES
Purpose: Measure differential pressure on condenser water pumps				Savings Estimate: Based on conservative engineering	
Comments: "Tools were very important. They were the only way to get data. Gave a lot more confidence in the results to me & client."					

Summary of Overall Savings

Looking at the 31 borrowers in Table 3.19, we see that a total of $2,100,000 will be saved annually. At $0.10/kWh this is more than 20 million kWh per year. The largest 11 saved 95% of this total. We discussed the savings calculations for these 11 large savers with the technical people at each company, and we feel that each estimate is a reasonable and conservative representation of the likely savings.

Table 3.21 summarizes the savings for the 31 respondents who were able to give a savings response. The savings were categorized by whether they were part of a utility/government program and what they would have done if the TLL tools were not available. It is important to see that more than 75% of the total savings was achieved by respondents who said they would not have implemented the project without the TLL. Respondents who claimed that they would have bought the monitoring equipment if it had not been available through the TLL were the next biggest category of savers, with total savings of $349,000 per year. The third highest savings values are achieved by those users who would have rented equipment. As one respondent notes, it is not clear that renting is always a feasible option because "renters charge very high prices for the equipment ($3000 per week for a data logger) and often do not have the equipment needed in stock."

If the sample that responded to our survey is representative of all the 2003 TLL participants, then we can extrapolate the savings for the sample in Table 3.21 over the entire 2003 list of projects. This results in a likely savings of $18,505,000 and 185 million kWh per year. This calculation assumes that 57% of the 471 projects in 2003 will be implemented and that, on average, each project will save $68,929 per year (.57 *471* $68,929 = $18,505,369). However, it is important to keep in mind that the distribution is skewed by a few large projects that realized the bulk of the savings. If we build the confidence intervals based on the distribution of savings from the projects, we have a confidence interval for the savings from a low of $2,196,085 to a high of $34,814,653.

We present these results with the understanding that no protocols have been established for allocating savings to information type programs. It is likely that the TLL deserves a portion of the credit for many of the projects that were previously claimed by one of the rebate programs. Just as certainly, it is unlikely that the TLL deserves 100% of the credit for those projects that were not previously claimed as part of a rebate program. As more of these types of information-only savings estimates emerge, addressing the issue of measuring and allocating savings benefits will become more critical.

Table 3.21: Overall Savings for Tool Lending Library from Sample Respondents

		Utility or Government Project		Grand Total	
What Would Have Done if TLL Was Not Available		No	Yes	$ Saved	% of Total $ Saved
Done Without, Not Proceed	**Sum**	**$2,028**	**$1,569,000**	**$1,571,028**	**74%**
	Average	*$676*	*$313,800*	*$196,379*	
	Count	*3*	*5*	*8*	
Purchased Tools	**Sum**	**$82,400**	**$266,474**	**$348,874**	**16%**
	Average	*$41,200*	*$44,412*	*$43,609*	
	Count	*2*	*6*	*8*	
Rented Tools	**Sum**	**$105,200**		**$105,200**	**5%**
	Average	*$52,600*		*$52,600*	
	Count	*2*		*2*	
Done Without, Proceed	**Sum**	**$20,000**	**$23,500**	**$43,500**	**2%**
	Average	*$5,000*	*$7,833*	*$6,214*	
	Count	*4*	*3*	*7*	
Borrowed Tools	**Sum**	**$1,000**	**$25,000**	**$26,000**	**1%**
	Average	*$1,000*	*$25,000*	*$13,000*	
	Count	*1*	*1*	*2*	
Hired Someone	**Sum**	**$18,200**		**$18,200**	**1%**
	Average	*$9,100*		*$9,100*	
	Count	*2*		*2*	
Don't Know	**Sum**	**$2,000**	**$22,000**	**$24,000**	**1%**
	Average	*$2,000*	*$22,000*	*$12,000*	
	Count	*1*	*1*	*2*	
Total Sum		**$230,828**	**$1,905,974**	**$2,136,802**	
	Total Average	*$15,389*	*$119,123*	*$68,929*	
	Total Count	*15*	*16*	*31*	

3.7 Interest in Tool Lending Library

As part of the satisfaction component of this study, 318 attendees from the six centers were interviewed. Of those respondents, 277 were asked a series of five questions on their interest in a tool lending library.[1] The questions gauged the respondents' interest in the lending of tools and the support services currently supplied by the PEC's TLL.

[1] A portion of the CTAC attendees sample was also asked detailed questions on energy saving for a pilot energy-saving study. Given the length of that pilot, it was decided not to ask this subsample the TLL battery of questions.

Each respondent was asked to list tools that they do not already have that they would find useful in the current work. Results are shown in Table 3.22. Other equipment mentioned were a heliodon, pyronometer, soil moisture sensor, reflectometer, and thermometers.

Respondents were then asked if they would be interested in a tool lending service. Table 2.23 shows that 80% of those interested in tools would also be interested in TLL services. The third column in table 2.23 indicates that approximately 55% of the attendees of courses (153 of the original sample size of 277) are interested in the tool lending service.

Table 3.22: Overall Interest in Measurement Tools

Question C22. Many courses discuss the use of measurement tools such as light meters, flow meters, vent hoods, infrared scanners, and watt meters to calculate potential energy savings or to measure actual savings achieved. What specific types of measurement equipment would you find useful but do not already own or have access to. [Multiple Responses Accepted]

Measure	Number of Respondents Finding Useful	Percent of Respondents Finding Useful (n=277)
Flow Meter	56	20%
Infra-red Scanner	54	20%
Light Meter	50	18%
Watt or Voltage Meter	48	17%
Airflow or Vent Hood	25	9%
Data Loggers	4	1%
Demand Meters	2	1%
Other	9	2%
None	86	30%
Don't Know	41	15%

Table 3.23: Interest in Tool Lending Library

Question C23: (The) [CENTER] has been thinking about loaning energy measurement tools to firms to collect data needed to measure their current energy consumption and help determine if an energy efficiency project would be cost-effective. Is this a service that you might find helpful?

	Count	Percent of Respondents (n=191)	Percent of Total Sample (n=277)
Yes	153	80%	55%
No	35	18%	13%
Don't Know	3	2%	1%

Table 3.24 shows the equipment that respondents would like to borrow. There is a general agreement between this table and Table 3.22. Other equipment mentioned includes: fish-eye lens, temperature sensors enthalpy, instruments to measure power quality, audible air meters looking for leaks, water infiltration scanners, and duct blasters.

Table 3.24: Equipment Respondents Would Be Interested in Borrowing?

Question C24: What equipment would you be interested in borrowing? [Multiple Responses Accepted]

Measure	Number of Respondents Interested in Borrowing	Percent of Respondents Interested in Borrowing
Infra-red Scanner	55	20%
Watt or Voltage Meter	54	20%
Flow Meter	50	18%
Light Meter/Loggers	48	17%
Airflow or Vent Hood	24	9%
Data Loggers	8	3%
Demand Meters	3	1%
Other	9	2%
None	124	45%
Don't Know	21	8%

Table 3.25 shows the responses when potential TLL users were asked whether they would need technical support. All but 6% of the respondents would need some technical assistance, with three-quarters needing assistance in what measures to take and instructions on how to operate the equipment.

Table 3.25: Level of Support Needed by Tool Borrowers

Question C25: If the tool lending service also supplied technical assistance, what is the minimum amount of support you would need?

	Frequency	Percent Respondents (n=153)	Percent of Total Sample (n=277)
Just the equipment, with no technical support	9	5.9%	3.2%
Instructions on how to operate the equipment	21	13.7%	7.6%
Instructions on how to operate the equipment and assistance in what measurements to take and formulas to use.	64	41.8%	23.1%
Assistance in what measurements to take and formulas to use.	55	35.9%	19.9%
Don't Know	2	1.3%	0.7%
Refused	2	1.3%	0.7%
Not Interested			44.8%
Total	153	100.0%	100.0%

3.8 Summary and Recommendations

3.8.1 User Satisfaction

The TLL is in many ways a hidden gem of a program—hidden because it remains in relative obscurity within the PEC. A gem because, as our own assessment and that of its users confirm, it is an example of a well-conceived and managed program that is providing demonstrable benefits to TLL users and PG&E and its customers. The authors of the evaluation have been heavily involved in the planning and evaluation of the California utilities' energy-efficiency programs for almost 10 years, and we were unaware of the existence of the TLL before this evaluation.

It's hard to find much to say that is not extremely positive about what our assessment found. We interviewed 104 users of the service and all 104 were satisfied or extremely satisfied with the service they received. All but one of the respondents was likely or extremely likely to recommend the service to a colleague.

It is important to emphasize that the TLL is more than just a tool warehousing operation. For every project, the TLL ensures that the borrowers have the know-how needed to operate the tools and the knowledge of how to use the tools to obtain the necessary measurements to address the particular queries posed. When users we spoke with needed

technical assistance, they were able to get it and all found the assistance useful or very useful.

3.8.2 The Benefits of the TLL

More importantly, our analysis shows that TLL is extremely effective in helping get energy projects implemented. Fully 57% of the sample of 2003 borrowers we spoke to had implemented the energy-efficiency projects for which the tools were borrowed. These 31 projects are estimated to save over $2,000,000 per year. We can extrapolate the sample over the entire population of 2003 borrowers assuming that the characteristics of the population of TLL users are similar to the characteristics of those users who responded to our phone survey. Doing so leads to an estimate of savings per year of $18.5 million and 185 million kWh, with confidence intervals at 90%, with savings ranging from a low of $2,196,000 to a high of $34,815,000 per year. According to respondents, 30% of these projects would not have proceeded if the TLL tools were not available. Approximately 10% of the total savings ($230,828 of $2,136,802, see Table 3.21) were performed in projects that were not previously counted as part of other utility or government programs.

Our interviews with tool borrowers indicate that even those who say they would have proceeded with their projects if they had not had the tool library tools received some benefits from the TLL. What is clear from our study is that the tools are often a driving force in bringing projects to fruition. In addition to the 30% who said the projects would not have proceeded, another 44% of respondents would have needed to find an alternative means of acquiring the tools for their projects to have proceeded.

The budget for the TLL in 2003 was $500,000. We have not provided a detailed cost-benefit for the TLL. An accurate TLL cost-benefit analysis requires a policy directive that has yet to be established on how much credit information-based programs should receive for contributing to the conception and implementation of utility-based incentive projects. In the case of the TLL, given the low cost of operating the TLL and the probable high amount of savings that is found, almost any apportionment of benefits will still find the TLL to be cost effective.

The measure of the value of the TLL is better expressed by the qualitative evidence supplied by its users. The survey and interviews demonstrates the importance of these diagnostic tools in promoting energy efficiency by overcoming the information barriers that often prevent implementation of feasible energy-efficiency opportunities. The tools provide critical information that often serves as the catalyst for projects going forward. Tools, along with the definitive measurement protocols that the TLL provides, identify energy opportunities by providing accurate baseline consumption figures and confirm savings estimates by documenting engineering assumptions. The TLL also made it possible for several projects to increase the savings achieved because the tools gave a more accurate picture of operations and let the engineers specify even more efficient solutions than would have been possible had there been no instrumentation study.

While these reasons are worthy ones in support of the TLL and the tools they lend, this study posits that the greatest benefit the tools/measurement protocols appear to provide is the role they play in selling a project. We heard repeatedly that the measurements produced by the tools were instrumental (pun intended) in convincing management or the clients that the project was worth pursuing. We should not underestimate the value of this feature. Most technicians have a difficult time communicating with non-technicians. The results of the tool studies are an effective bridge, providing easy-to-understand, definitive proof of a project's value. In these cases, the tool/protocol measurements got the financial decision makers to buy into the projects.

This last factor underscores the true value of the TLL. For the 44% of implemented projects, the ones that would have likely gone forward but needed to find tools from an alternative source, the TLL is a far superior option than buying or renting tools. Buying and renting the equipment are both expensive options. One respondent noted that the tools he needed would have cost him $12,000 to rent for the four weeks he needed them. Essentially these costs are high enough that they require the financial decision makers to buy into the projects at this earlier stage when savings estimates are not yet confirmed. The tools lent by the TLL allowed the decision point for the financial decision maker to move to the point where accurate measurement of potential savings was already obtained.

3.8.3 The Demand for TLL Services

In 2003, the TLL processed 513 separate projects, 471 of which are external to PG&E staff use. The goals for 2004 and 2005 are 800 and 1000 separate projects.

Our survey of attendees at the various Energy Centers in California indicates that there is plenty of demand for tool lending services among the population of energy course attendees[2]. Around 80% of those course attendees interested in tools (55% of the entire sample) would also be interested in TLL services if they were available. These potential users are also likely to need and want technical assistance.

3.8.4 Recommendations

Funding for TLL Should Be Increased

The TLL should grow at a more aggressive rate. All the indicators are there to suggest that the TLL should be expanded. The TLL is a relatively low-cost service that helps generate substantial benefits. This research shows that when firms are made aware of the tool lending concept, they are very interested in the services. With strategic marketing, the TLL could expand demand for the services. Finally, given the work done to use the Internet for on-line applications and answering technical questions, the TLL is well organized and should be capable of meeting larger demand if the budget were increased.

[2] Additional expert opinions about the demand for a tool lending library are presented in Section 4.4.3.

TLL Needs to Expand Its Marketing, but Do So Wisely

The TLL needs to broaden its marketing scope to make the services known to more design professionals, engineers, and building operators. We appreciate that broader marketing is likely to build awareness of the TLL to other less desirable potential lendees, but a cautious growth in marketing and development of loan requirements can control this issue. We fully agree with the TLL that they cannot accommodate the needs of all potential borrowers, especially individual homeowners or non-technical individuals with small potential energy savings. These potential borrowers require a lot of technical assistance with little prospect for large savings.

However, the current approach to avoiding these types of inquiries is to restrict promotion to well-known, predictable channels. This has not proven to be adequate in meeting the current growth objective and would certainly not be sufficient if a more accelerated growth plan were adopted.

However, we do not recommend broad-based advertising for the TLL as it cannot be targeted. A better strategy would be to use broad-based marketing to attract new faces to the PEC courses and then use these courses as a conduit to the TLL. In addition, the TLL should continue its outreach to special groups and to utility reps who can scout for potential projects. Over time, we suspect that the new webpage, which is less than a year old, will become an important source of new leads.

At the same time, the TLL should consider adopting explicit requirements for lendees. These restrictions could be based on building use and may be graduated by the tool to be lent. Only larger projects could borrow the most expensive and most complicated tools. It is also not unreasonable to require a certain degree of expertise before lending a tool. Those individuals lacking in job expertise could be made eligible by attending a tool course at the PEC.

Move towards a Separate Budget Line for the TLL

The obscurity of the TLL is partly due to the fact that the TLL stays hidden within the PEC's activities. Giving the TLL its own budget line brings greater attention and awareness, which would be positive, and more scrutiny, which, given the results of this evaluation, should be no problem for the TLL to handle.

4 PG&E Energy Training Center (Stockton): Title 24 Courses

4.1 Introduction

4.1.1 Case Study Objectives

One key objective of this case study was to find out why more people were not taking T-24 courses. Interviews with the Pacific Gas and Electric Energy Training Center (PG&E-ETC) program manager indicated that attendance levels at T-24 courses were lower than expected. This part of the case study was designed to assess a number of possible barriers to participation, lack of awareness of the PG&E-ETC and its course offerings, competition from other training programs, and concerns about driving distance. It was also designed to collect information about the training practices and preferences of nonparticipating market actors. This included their reactions to PG&E-ETC approaches – such as adding mobile training capability – designed to increase participation.

Another important objective was to help the PG&E-ETC prepare for changes in the T-24 rules that will go into effect in October 2005. These rule changes will create a new need and demand for T-24 training, and it is important that the PG&E-ETC be ready to meet this new demand effectively. This part of the case study was designed to find out how aware and knowledgeable market actors were of the new T-24 rules. It was also designed to collect information about any intentions these market actors have to receive training on the new T-24 rules, including the likely timing and source of such training. The case study also planned to supplement this information from the market actors with information from a group of T-24 experts. The study would ask these experts to assess the general level of knowledge/awareness of the new T-24 rules among the key market actors and the likely timing of any demands for training. It would also ask them how PG&E-ETC (and others in California) could increase awareness of the new T-24 rules and how the PG&E-ETC could change the content or delivery method of its T-24 courses to better meet the new training needs.

4.1.2 Section Layout

This section report will be laid out as follows:

- A brief description of the PG&E-ETC classes covered by the case study
- A description of the evaluation methodology
- The detailed findings of the report including separate sections describing:
    - Participant survey results
    - Nonparticipant survey results
    - T-24 expert survey results
- Summary findings and recommendations.

4.2 Description of the Classes

Table 4.1 shows descriptions of the T-24 courses offered by the PG&E-ETC. The T-24 Air Distribution Diagnostic Testing (ADDT) course was recommended by PG&E-ETC for this case study. All data for "T-24 Course Attendees" presented in this case study are derived from a survey of attendees of the T-24 ADDT course only. However, the findings and recommendations of this report are relevant to all these T-24 courses.

Table 4.1: Course Descriptions

Course Title	Course Description
T-24 Air Distribution Diagnostic Testing (ADDT)	Review of T-24 test and documentation requirements, plus hands-on experience operating duct tester, flow hood, digital manometer, and blower door equipment. One-day course.
T-24 Duct Design (ACCA Manual D)	Review of Air Conditioning Contractors of America (ACCA). Residential Design System and approved software, Manual D procedure, and proper documentation. Learn how to achieve efficiency compliance while optimizing ductwork for competitive pricing and comfort. This one-day course is a prerequisite for the T-24 Zoning Design course.
T-24 Duct Installation Standards	Review of the latest T-24 standards for airtight ducts. Full explanation of UL181 requirements, approved materials, installation criteria, sealing and testing requirements, and duct insulation. Students receive binder with resource materials. Half-day course.
T-24 Equipment Sizing & Selection (ACCA Manual J)	Review of ACCA load calculation and equipment selection process; room-by-room loads that lead into Manual D Duct Design (compliance credit component); safeguards for "right" sizing while avoiding undersizing; and ACCA-approved software. This one-day course is a prerequisite for the T-24 Zoning Design course.
T-24 Zoning Design (ACCA)	This 1-day program builds upon the knowledge gained in the T-24 Equipment Sizing & Selection and T-24 Duct Design courses. Students learn how to successfully solve residential comfort and energy problems using zoned systems. The classes include "real world" examples with results of zoning solutions that work. The types of zoning hardware and T-24 credit for zoning are also reviewed.

4.3 Methodology

Because much of the research focused on why market actors are not taking PG&E-ETC T-24 courses or T-24 courses in general, much more emphasis was placed on collecting information from nonparticipating market actors and market sector experts. However, the study did collect participant information from two sources. First, it compiled and tabulated the results of 72 post-training survey forms that had been completed by T-24

ADDT course attendees after taking the courses in 2003. Second, a special section was added to the general course attendee survey so that T-24 questions could be addressed to those who defined themselves as being in the construction, engineering, or architectural design industries. These general course attendees were participants in the sense that they had all taken PG&E Pacific Energy Center (PEC) or ETC courses, about half had taken PG&E-ETC courses, and a few (8 of the 43) had taken T-24 courses.

Table 4.2 provides summary information on the four surveys that were used to collect the information in this report. It describes not only whom the surveys targeted but also why they were targeted. It also explains the types of information that each survey gathered. When presenting the survey results, this study will refer to respondents of the first participant survey as "T-24 ADDT course attendees," or "Course Attendees" and respondents of the second participant survey as "PG&E General Attendees." This second group is the 43 PG&E Energy Center attendees (from ETC and PEC) who were asked the T-24 questions.[3]

After the T-24 experts had been surveyed, they were sent a matrix containing all the recommendations for increasing T-24 awareness, encouraging T-24 training, and improving the PG&E-ETC T-24 offerings. The experts were asked to provide ratings for these recommendations using a scale of 10 to 1 where 10 equaled "completely agree" and 1 equaled "completely disagree". They were also asked to comment on these ratings. Six of the 10 experts provided ratings for these recommendations. These ratings were used to prioritize the recommendations in this case study.

This survey information was supplemented by other information including:

- An interview with the program manager of the PG&E ETC and multiple communications with other members of the PG&E ETC staff
- A review of information on other T-24 training courses
- An examination of the PG&E ETC tracking data on 2003 course attendees
- A review of past evaluations of the PG&E ETC
- An examination of the changes in T-24 standards.

[3] A total of 101 PG&E Energy Center attendees responded to the General Attendees survey. Other sections of this report discuss the non-Title 24-related survey responses of this larger group.

Table 4.2: Summary of Survey Instruments

Survey	# of Respondents	Sample Frame & Methodology	Purpose
T-24 ADDT Course Attendee Participant Survey	72	Paper survey administered to ETC 2003 T-24 Air Diagnostic Testing Training attendees at the end of the course.[4] The surveys were collected each of the eight times the course was offered in 2003.	The purpose of the survey was to measure satisfaction with the course and to get participants to estimate how much the course raised their knowledge and skill level. The survey also collected information about the professions of the attendees and how much work experience they had.
General PG&E Course Attendee Participant Survey	43	Telephone survey administered in January 2005 to construction, engineering, and architectural design attendees of 2003 PG&E-ETC (21) and PEC (23) courses. A copy of the survey instrument is located in Appendix A.	To see whether T-24 knowledge and activity was any greater among market actors who were likely more knowledgeable and proactive about energy efficiency (they had attended a course) than those who were surveyed in the nonparticipant survey. Builders, engineers, and designers were targeted because the PG&E-ETC has had less success attracting these market actors to its T-24 classes than HVAC contractors/ installers.
Nonpartici pant Survey	40	Telephone survey administered in January 2005 to a random sample of names from the mailing list that PG&E ETC uses for distributing its course calendar.[5] A copy of the survey instrument is located in Appendix C.	To find out why they had not attended PG&E-ETC T-24 courses in particular, and PG&E-ETC courses in general. To find out what their companies' practices were regarding external training and gathering energy information. To find out what their preferences were concerning course length, time period, and driving distance. To gauge their T-24 knowledge and activity.
T-24 Expert Survey	10	Telephone survey administered to experts on T-24 issues during the winter 2004-2005 period. These included directors of other T-24 training courses, T-24 compliance consultants, T-24 software developers, HVAC contractor and building industry trade association representatives, and HERS raters. A copy of the survey instrument is located in Appendix E.	To obtain estimates of current levels of T-24 knowledge and activity in California. To explore barriers to greater T-24 knowledge and activity. To obtain projections of when market actors were likely to start taking T-24 courses. To find out what other T-24 training options were available besides the PG&E-ETC. To get recommendations on how the PG&E –ETC and others could encourage market actors to become educated about the new T-24 rules.

[4] Although the PG&E-ETC administered the survey back in 2003, a detailed compilation, tabulation, and analysis of this data had not been done before this evaluation.

[5] PG&E ETC's mailing list is mostly comprised of PG&E-area contractors whose names appear on a list obtained from the California contractor licensing board.

4.4 Findings

4.4.1 Participant survey results

Who responded to the surveys

The two participant surveys reached quite different sets of market actors. As Table 4.3 shows, nearly 80 percent of the T-24 ADDT Course Attendees identified themselves as either HVAC contractors/installers or HVAC contractors/installers in training. Although the hands-on nature of this course made it more appealing to HVAC contractors/ installers, the PG&E-ETC has marketed this course to a much wider variety of market actors. For example, the 2003 PG&E-ETC course brochure recommends the T-24 ADDT course to HVAC contractors, residential builders, mechanical engineers, energy consultants, Home Energy Rating System (HERS) raters, building department inspectors, and building department plan checkers. Most of the other T-24 courses are targeted at a similarly broad range of market actors.

Table 4.3: Occupations of T-24-- ADDT Course Attendees

QI1-QI2 What is your job title?

Attendee Occupation	Percent of Total Self- Identified Attendees[6]
HVAC contractor/installer	66%
HVAC installation student/trainee	13%
Energy consultant/ design engineer	9%
Building inspector/ estimator	7%
Builder	4%
Property manager	2%
N = 56 self-identified attendees (out of 72 total survey respondents)	

[Percentages do not sum down columns to 100% due to rounding error]

In contrast, only about one-fifth of the PG&E general attendees identified "equipment sales, installation, repair, or maintenance" as a service that they offered. They were more likely to identify themselves as offering "construction" or "engineering or architectural design services." As discussed in the Section 4.3, the higher proportion of builders, engineers, and architectural designers in the general PG&E Energy Center attendee survey was intentional.[7]

The general attendee survey results also showed interesting differences between the two PG&E training center samples (Table 4.4). The ETC sample had a much large proportion

[6] These were attendees that identified their occupation or company on the survey form.
[7] The Title 24 question sequence of the general training attendee survey was only administered to PG&E supply-side actors who offered either construction or engineering or architectural design services. They often offered additional energy services.

of its respondents offering "construction" services, while the PEC sample had a much large share of respondents offering "engineering or architectural design services." There are a number of possible reasons for this disparity. One possible explanation is the difference in the range of courses offered by the two training centers. Another reason might be differences in driving distance. It is very likely that architects and designers living in the Bay Area find the PEC's location in San Francisco much more convenient than the ETC's location in Stockton.

Table 4.4: Services Provided by PG&E --General Attendees

QNA3. What type of energy related services or equipment do you provide? [Respondents could identify multiple services]

Energy Center Attended	Construction	Engineering or architectural design	Lighting or other design assistance	Equipment sales, installation repair or maintenance	Facility operations or maintenance	Research
PG&E ETC (n=21)	71%	43%	19%	24%	14%	14%
PG&E PEC (n=22)	32%	82%	18%	14%	14%	5%
Overall (n=43)	51%	63%	19%	19%	14%	9%

Because the study was concerned about T-24 awareness, knowledge, and activity for PG&E training attendees in general – rather than just those who attended a certain PG&E Energy Center – general attendee survey results are usually not broken out by Energy Center. However, we applied sample weights, as shown in Table 4.5 to the combined results to adjust for the larger size of the PEC population. These weights are used in all of the subsequent PG&E general attendee tables.

Table 4.5: Weighting Factors for PG&E Energy Center Attendees Survey Results

	ETC Attendees	**PEC Attendees**	**Total PG&E**
Population	1,396	4,831	6,227
Weights	**22%**	**78%**	

The survey results showed that the T-24 ADDT course attendees spend less than half of their total work time performing tasks requiring the skills and knowledge taught in the course (Table 4.6). The results also showed that they are a relatively diverse group when

it comes to relevant work experience (Table 4.7). Finally, general attendees had diverse self-perceptions of energy-efficiency knowledge (Table 4.8).

Table 4.6: Importance of Course-Taught Skills in Total Services Offered by T-24-- ADDT Course Attendees

Q6. What percentage of your total work time will you spend performing tasks requiring the skills and knowledge taught in the course?

Percent of Time Spent Performing Tasks	Percent of Respondents (n=71)
0-20%	38%
21-40%	21%
41-60%	21%
61-80%	10%
81-100%	10%
Total	100%

Table 4.7: Relevant Work Experience of T-24 --ADDT Course Attendees

QI3. Number of years in this type of work?

Number of Years	Percent of Respondents (n=49)
< 5 years	38%
5 to < 10 years	24%
10 to < 20 years	24%
20+ years	14%
Total	100%
Average experience was nine years	

Table 4.8: Relative EE Knowledge Level of PG&E--General Attendees

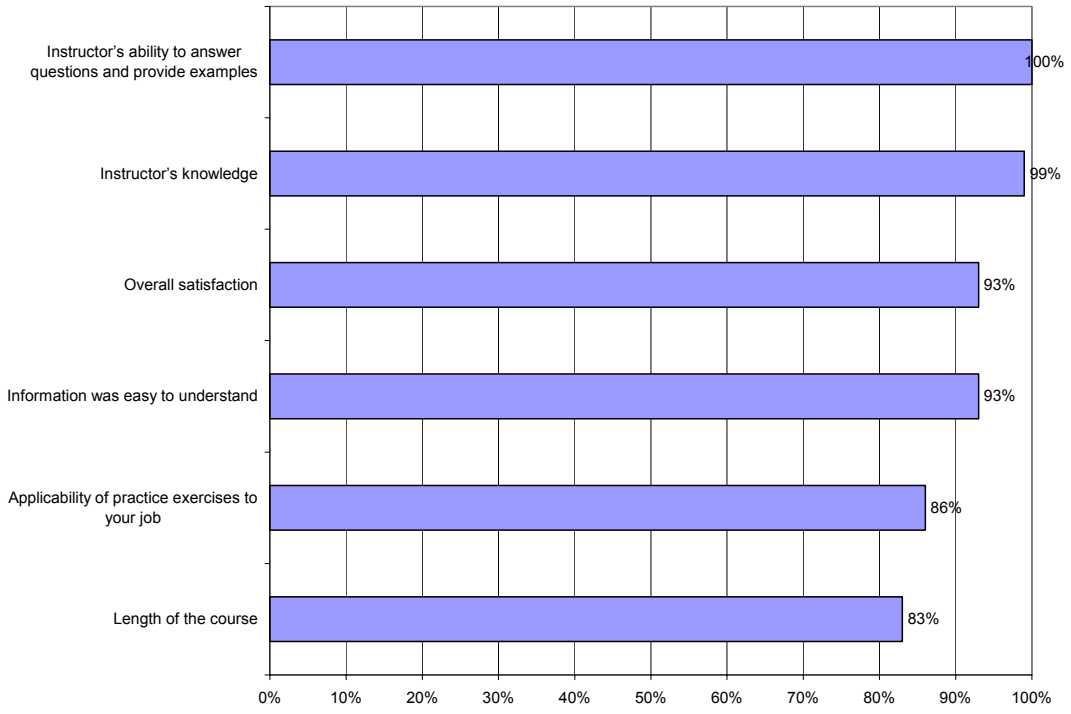
QNC10. How would you rate your knowledge of energy efficiency measures as compared to your peers in the industry?

Response Category	Percent of Respondents (n=43)
More knowledgeable than most	22%
About as knowledgeable as average	56%
Not well informed about energy efficiency	22%

Satisfaction with the Courses

Attendees were very satisfied with the T-24 ADDT course. The survey asked the T-24 ADDT attendees how satisfied they were with many different aspects of the course and more than 80% of the respondents gave satisfaction ratings of four or greater (on a 5-point scale) for each of these course attributes (Figure 4.1). Satisfaction ratings were particularly high for the performance of the course instructors. Attendees were least satisfied with the length of the course. The survey of PG&E general attendees only asked for an overall satisfaction rating of the course, but this too was very high (see Section 2.3). These high satisfaction scores make it very unlikely that lower-than-expected attendance figures at the PG&E-ETC T-24 courses are due to poor word-of-mouth reports from prior attendees.

Figure 4.1: Satisfaction Level of T-24-- ADDT Course Attendees



Effects of Taking the Course. The T-24 ADDT course attendees were asked to rate their pre- and post-course performance level for the skills and knowledge taught in the course. They were given a scale in which 100% represents "outstanding/exemplary performance," 50% means that they "could have performed the task half as fast and half as well," and 0% means that they "could not have performed the task at all." Table 4.9 shows that the respondents believed that the course improved their performance by an average of 40%.

Table 4.9: How T-24 Course Attendees Rated Their Pre- and Post-Course Performance

Q8-Q9. – Rate your performance before/after completing this course on the tasks requiring the skills and knowledge taught in this course/workshop?

Average Pre-Course Performance Level	Average Post-Course Performance Level	Net Improvement (s.d.)
33%	73%	40% (29.8)
N = 72 respondents		

T-24 Knowledge and Plans. The survey asked PG&E general course attendees about their awareness of the pending changes in T-24 standards. It also asked them for their perceived knowledge level of these changes. When the general course attendees were asked whether they were aware that new Title 24 building energy-efficiency standings would go into effect on October 1, 2005, 85% said yes. However, the results also showed that these attendees did not consider themselves very knowledgeable of these new standards. Only a quarter of the respondents rated their knowledge level as four or greater on a scale where 5 indicates "very knowledgeable" (Table 4.10).

Table 4.10: General PG&E-ETC Course Attendee Knowledge of Pending Changes in T-24 Building Standards

QNPG2. On a scale of 1 to 5, where 1 indicates "not at all knowledgeable" and 5 indicates "very knowledgeable," how knowledgeable do you consider yourself to be about the latest Title 24 building standards? [Only asked of those who were aware of changes in Title 24 building standards]

Response Category	Percent of Respondents (n = 34 respondents; 14 ETC, 20 PEC)
5 – very knowledgeable	7%
4	18%
3	47%
2	14%
1 – not at all knowledgeable	13%
Total	99%

[Percentages do not sum down columns to 100% due to rounding error]

The survey, conducted in January 2005, asked the general attendees whether they had taken any courses to learn more about the new T-24 standard and where they had taken these courses. Only 34% of the attendees who were aware of the new T-24 standards said they had taken a course on the subject. The large majority reported taking the course at PG&E (Table 4.11), but PG&E had not yet offered courses on the new T-24 standards when the question was asked. Respondents may have believed that a course on the *existing* T-24 standards was covering the *upcoming* standards. Therefore, substantially fewer than the 34% who say they are aware of the new standards may be aware.

Table 4.11: Who Was Offering the T-24 Courses That You Took? General PG&E-ETC Course Attendee

QNPG4. Who was offering this course? [Only asked of those who said they attended a Title 24 course]

Who Offered the Course	Percent of Respondents (n = 11 respondents, 13 responses
PG&E-ETC	71%
PG&E-PEC	34%
Unspecified PG&E	20%
American Institute of Architects	9%
Total	100%

The survey also asked the six respondents who reported taking the T-24 course with someone other than PG&E-ETC why they had not chosen the PG&E-ETC for their courses. Table 4.12 shows that there was a wide variety of reasons.

Table 4.12: Reason for Not Taking PG&E ETC T-24 Course? General PG&E-ETC Course Attendee

QNPG5. What is the reason that you didn't take a course with the California Energy Training Center on the new Title 24 changes? [Only asked of the six who said they took a Title 24 course other than PG&E ETC course]

Reasons	Percent of Respondents (= 6 respondents, 7 responses)
I didn't realize courses were offered	17%
The time periods were not convenient	17%
The ETC is too far away	17%
The courses weren't relevant to me	17%
The ETC never contacted us	17%
It hasn't been an urgent need	17%
Don't know	17%

The survey asked the PG&E general attendees about their future plans for taking courses on the new Title 24 standards. A total of 68% of those who were aware of the new standards said that they planned to take a course on the subject. Of those planning to take a course, over 80% said that they planned to take a course with a PG&E Energy Center (Table 4.13). Once again, the ambiguity of some of the open-ended responses made it difficult to determine whether the respondent planned to take this course with the PG&E-ETC or the PG&E-PEC. The survey also asked the 16 respondents who planned to take their T-24 courses with someone other than PG&E-ETC why they had not chosen the PG&E-ETC for their courses. Lack of awareness that the courses were being offered and driving distance were the two most-cited reasons.

Table 4.13: Preferred Course Providers? General PG&E-ETC Course Attendee

QNPG7. Who are you likely to take the courses from? [Only asked of those who said they were likely to take course in Title 24 building standards]

Course Offeror	Percent of Respondents (n= 24 respondents, 25 responses)
PG&E-PEC	34%
PG&E-ETC	30%
Unspecified PG&E	21%
Sacramento Municipal District (SMUD)	6%
American Institute of Architects	6%
Southern California Gas	2%
Don't know	2%
Total	101%

[Percentages do not sum down columns to 100% due to rounding error]

Table 4.14: Reasons for Not Taking PG&E ETC Course? General PG&E-ETC Course Attendee

QNPG8. Why are you not planning to take a course with the California Energy Training Center on the new Title 24 changes? [Only asked of those who said they were planning to take a Title 24 course other than PG&E ETC course]

Reasons	Percent of Respondents (n= 16 respondents, 17 responses)
I didn't realize courses were offered	43%
The PG&E-ETC is too far away	25%
Don't have enough information on the PG&E-ETC and its location	21%
Don't Know	11%
Total	100%

The survey asked the PG&E general attendees whether they are using any of the new T-24 standards in their business practices and, if not, when they planned to do so. Nearly half of the respondents said that they were already using the new T-24 standards in their business practices. However, these responses must be viewed with some skepticism. First, most of these respondents had not rated their knowledge of the T-24 standards very highly. Second, the expert interviews indicated that the likelihood of builders or contractors actually incorporating the new T-24 standards at the time of the interviews[8] was very unlikely. This is not only due to cost considerations but also because approved design software for incorporating the new T-24 standards is not yet available. It is also possible that some of the respondents were talking about existing T-24 requirements rather than the new ones.

Table 4.15: Currently Using New T-24 Standards in Business Practices? General PG&E-ETC Course Attendee

QNPG9. Are you currently using any of the new Title 24 standards in your business practices? [Only asked of those who were aware of changes in Title 24 building standards]

Response Category	Percent of Respondents (n=34)
Yes	46%
No	54%
Don't Know	0%
Refused	0%
Total	100%

Finally, the survey asked the 18 attendees who were aware of the new T-24 requirements, but had not yet begun to implement them, when they planned to do so. Only a third said that they would do so before the new T-24 requirements become mandatory (Table 4.16).

[8] The interviews were conducted in January 2005.

Table 4.16: When Incorporating New T-24 Standards in Business Practices? General PG&E-ETC Course Attendee

QNPQ10. When were you planning to start incorporating the new Title 24 standards in your business practices? [Only asked of those who were not currently using new Title 24 building standards in business practices]

Time Period	Percent of Respondents (n=18)
In the next six months	11%
Later than six months but before required date (10/1/05)	22%
When it becomes a requirement (10/1/05)	44%
My business doesn't require compliance with Title 24	6%
Don't know	17%
Total	100%

4.4.2 Nonparticipant Survey Results

This section presents the results of a January 2005 survey of nonparticipating market actors. This nonparticipant sample was derived from a random sample of names from the mailing list that the PG&E ETC uses for distributing its course calendar.

Who responded to the surveys

The majority of the respondents to the nonparticipant survey were builders and general contractors. As noted in the discussion of the participant results, the PG&E-ETC has had less success attracting these market actors to its T-24 classes than HVAC contractors/ installers. Therefore, it is useful to find out more about their T-24 knowledge and training preferences. The nonparticipant survey sample was randomly drawn from the mailing list that PG&E-ETC uses for distributing its course calendar. Table 4.17 shows the characteristics of the sample.

Table 4.17: Types of Market Actors Responding to the Non-participant Survey

Occupation	Percent of Respondents (n=40)
Builders/ General contractors	60%
HVAC/ refrigeration/ pool contractors	20%
Energy consultants/ Design engineers	5%
Other*	15%
Total	100%

*Includes property managers, realtors, home improvement retailers, etc.

Awareness of the PG&E-ETC. The survey asked the nonparticipants whether they had recalled receiving the course calendar and whether they had heard of the PG&E-ETC. Fewer than half of the nonparticipants recalled receiving the course list, and a slightly smaller percentage than this had heard of the PG&E-ETC (Table 4.18). The survey asked those who had heard of the PG&E ETC what their source of information had been. Brochures or course calendars accounted for nearly two-thirds of the sources, with professional organization being a distant second.

Table 4.18: Awareness of the PG&E-ETC-- Non-participant Survey

Question QNAI. Do you recall receiving this list of courses from PG&E's Energy Training Center? Question QNA2. Have you ever heard of the PG&E Energy Training Center in Stockton, California?

Response Category	Percent of Respondents (n=40)
Recall receiving course list	45%
Heard of PG&E ETC	43%

The survey asked the 17 respondents who had heard of the PG&E-ETC whether they had recently taken a course there. Results are shown in Table 4.19. Only five had done so, although some of these had taken multiple courses. (Of these attendees, one of them had taken T-24 ADDT – the case study course.) These attendees, along with a sixth attendee who had taken a PG&E-ETC course before 2003, were asked how much time it took them to travel to the training course. The responses ranged from 45 minutes to one hour and 45 minutes.

Table 4.19: How Heard of PG&E ETC-- Non-participant Survey

Question QNA3. How did you hear about the Energy Training Center and the seminars/workshops they offer? [Multiple responses accepted]

Information Source	Percent of Respondents (n=17 respondents, 22 responses)
Brochure/ course calendar	65%
Professional Organizations	18%
Internet/the ETC's website	12%
E-mail	6%
Someone at my company	6%
A consultant or contractor	6%
Don't Know	18%

Reasons for Not Taking the PG&E-ETC Course. The survey asked the 11 respondents who were aware of the PG&E-ETC but had never taken a course there, why they had not done so. As Table 4.20 shows, the perception that the PG&E ETC "was too far away" was the most cited reason, although there was a wide range of reasons.

Table 4.20: Why Haven't Taken PG&E Energy Training Center Courses?-- Non-participant Survey

Question QNA9. Why haven't you taken a course with the Energy Training Center? [only asked of respondents who had heard of the ETC]? [Multiple responses accepted]

Reason	Percent of Respondents (n= 11 respondents, 16 responses)
Energy Training Center too far away	45%
Time period/ day of week not convenient	27%
No course topic relevant/useful to my job/business	18%
Didn't realize courses were offered	9%
Company/Trade association rep/HVAC manufacturer/distributor recommended a different course	9%
My company rarely/never offers training	9%
Too expensive	9%
Hire others to do Title 24 work	9%
Not enough staff/time	9%

Ways to Get More Attendees at PG&E ETC Training Courses. PG&E-ETC is currently trying, or considering, two ways to increase attendance at its courses. One is the use of a mobile training center to shorten the driving distance for attendees. Another idea is to lend tools – such as duct blasters – as an incentive for attending a training course. The survey asked the 17 respondents who had heard of the PG&E-ETC whether any of these ideas would make them more likely to take a course. In both cases, a majority of the respondents said that these ideas would make them more likely to take a course. The mobile training center was the more popular option (Table 4.21).

Table 4.21: Attraction of Mobile Training Center or Tool Lending-- Non-participant Survey

Question QNA10. If the Energy Training Center had a mobile training center that moved to an area closer to you than Stockton, California, do you think that you would be more likely to take a course? Question QNA11. If the Energy Training Center allowed people who attended one of their energy training courses to borrow tools like duct testers, do you think that you would be more likely to take a course there?

	Mobile Training Center		Tool Lending	
Response Category	Number of Respondents	Percent of Respondents	Number of Respondents	Percent of Respondents
Yes	11	65%	8	47%
No	3	18%	6	35%
Depends on how close it was to me/ what tools are available	3	18%	3	18%
Total	17	101%	17	100%

[Percentages do not sum down columns to 100% due to rounding error]

General Training Attitudes, Practices, and Preferences. The nonparticipant survey tried to get a better understanding of attitudes, practices, and preferences related to outside training. Had these people not responded to the PG&E ETC course calendar because they did not like what the PG&E ETC was offering? Or did they just have no interest in energy-efficiency-related training? Was outside training even something that their company typically encouraged?

The survey found (Table 4.22) that most of the respondents do work at companies where outside training takes place at least once a year. However, when they were asked whether there were any energy-related skills or areas of knowledge that they wished they could receive training in, only a third said yes (see Table 4.22).

Although this response may be discouraging for energy education and training centers like the PG&E-ETC, it must be put into proper context. Lack of knowledge often leads to a disconnect between a person's perceived needs and his or her actual needs. Nearly all the respondents are in fields that will be significantly affected by the October 2005 changes to the T-24 building standards. Yet, as three of the surveys in this case study show, [9] knowledge that T-24 building standards are changing is low. Since so few of the market actors know that T-24 standards are changing, they would not identify the new T-24 practices as a knowledge gap that they need to fill.

[9] These three include the General PG&E Course Attendee Participant Survey, the Nonparticipant Survey, and the Title 24 Expert Survey

Table 4.22: Frequency of Outside Training?-- Non-participant Survey

Question QNG1. How often, if at all, do you or your co-workers receive outside training to increase your job-related knowledge and skills?

Response Category	Percent of Respondents (n=40)
Multiple times per year	30%
About once a year	28%
Seldom	25%
Never	18%
Don't Know	0%
Refused	0%
Total	101%

[Percentages do not sum down columns to 100% due to rounding error]

Table 4.23: Desire for Energy-related Skills/knowledge Training-- Non-participant Survey

Question QNG2. Are there any energy-related skills or areas of knowledge that you wish you could receive training on in the next couple of years?

Response Category	Percent of Respondents (n=40)
Yes	33%
No	60%
Don't Know	8%
Total	101%

[Percentages do not sum down columns to 100% due to rounding error]

The survey also asked the respondents what energy-related skills or knowledge areas they would like to learn more about. Three-quarters of the respondents gave responses. This suggests that while only a minority feels a need to take outside training on energy-related topics, a large majority has some interest in "learning" more about such topics. Therefore, there may be some opportunities for Energy Centers like PG&E ETC to offer some less time-demanding education and training such as web-based learning or trade journal articles. Table 4.24 shows the verbatim responses of the respondents organized by energy topics. It is interesting to note that although some of the desired knowledge/skill areas such as "duct blasting, testing for duct leakage" are relevant to the new T-24 requirements, none of the respondents mention T-24 explicitly. This is further evidence of the need for more education about the change in the T-24 standards.

The survey asked the nonparticipants where they currently get their energy information and what would be the best way to inform them of the training courses. Table 4.25 shows that respondents get their energy information from a wide variety of sources. Although trade journals were the most popular source, they accounted for only a small share of the

total responses. Table 4.26 shows that most respondents preferred to get their training course information through the mail.

Table 4.24: Desired Energy-related Skills/knowledge-- Non-participant Survey

HVAC (6)
"Heating and air conditioning, because it's the largest cost in energy."
"HVAC heating"
"Just learning the equipment, furnaces and air conditioning units.
"More involvement with advanced air conditioning systems. Training for tuning for maximum efficiency."
"Specific to HVAC and refrigeration."
"Air-conditioning, saving energy"
Solar (5)
"Applications to residential contracting, all aspects including solar."
"Solar home systems."
"I did a lot on solar."
"Solar"
"The impact of photo-voltaic systems and solar energy (taught directly for home inspectors)"
Energy Efficiency (4)
"More involvement with advanced air conditioning systems. Training for tuning for maximum efficiency."
"Energy efficiency programs and commercial programs."
"Straight conservation and efficiency"
"Air-conditioning, saving energy"
Building Envelope (4)
"Moisture intrusion
"For the home radiant heat barriers"
"Duct blasting, testing for duct leakage."
"Sealing the shell of the house."
Electrical, Electronics (4)
"Classes on electrical systems, high voltage cable splicing and basic electrical theory classes."
"Electronics, circuit boards, specific to pool/spa business."
"Smart home technology."
"Electrical"
Residential Applications (4)
"Applications to residential contracting, all aspects including solar."
"For the home radiant heat barriers"
"Solar home systems."
"Smart home technology."
Refrigeration (2)
"Refrigeration"
"Specific to HVAC and refrigeration."
C & I Applications (2)
"Commercial industry energy management equipment."
"Energy efficiency programs and commercial programs."
Pools (1)
"Electronics, circuit boards, specific to pool/spa business."
New Construction (1)
"I'm in architecture. I want to find out about new technologies and proper implementation, and return on investments."
Lighting (1)
"Lighting"
Other Suggestions (1)
"The courses they offered last year would be just fine"
N = 30 respondents, 35 responses

Table 4.25: Sources of Information on Energy Efficiency and New Technologies? Non-participant Survey

QNI1. What sources of information do you or other decision makers at your firm prefer to use to collect information on energy efficiency or on new technologies generally? [Multiple responses accepted]

Information Source	Percent of Respondents (n= 40 respondents, 62 responses)
Trade journals	35%
Internet	23%
Product books/catalogs from manufacturers	18%
Seminars or workshops	13%
Consultants (engineers/architects)	13%
Manufacturers reps	8%
Distributors or other sales staff	8%
Newspapers, News	8%
Direct mail/ Written material	8%
Colleagues outside my company	5%
Utility company	5%
Others at my company	3%
E-mail	3%
Don't have use for such information	8%
Don’t know	3%

Table 4.26: Preferred Means to Inform about PG&E ETC Courses? Non-participant Survey

QNI2. What would be the best way to inform you or others in your position about future PG&E Energy Training Center courses? [Multiple responses accepted]

Information Source	Percent of Respondents (n= 40 respondents, 51 responses)
Brochure/ Direct Mail	46%
E-mail	20%
Internet	10%
Information in my utility bill	5%
Professional organizations	3%
Trade show display	3%
Workshop session	3%
Consultants/ Contractors	3%
Cell phone call	3%
Don’t have time for the class	3%
Don’t know /refused	6%

The nonparticipants were also asked for their preferred day of the week and time of day for taking a training course. Their responses show that no one day of the week is particularly favored, although morning classes are much more popular than classes during other time periods.

Table 4.27: Preferred Day of Week for Courses-- Non-participant Survey

QNI3. What day(s) of the week would be best for you to attend a training course? [Multiple responses accepted]

Day of the Week	Percent of Respondents (n= 40 respondents, 72 responses)
No particular day	33%
Tuesday	30%
Wednesday	30%
Thursday	30%
Friday	18%
Monday	15%
Saturday	15%
Sunday	8%
Don't know	3%

Table 4.28: Preferred Time of Day for Course-- Non-participant Survey

QNI4. What period of day would be best for you to attend a training course?

Period of Day	Percent of Respondents (n=40)
Morning	45%
Evening	23%
Afternoon	15%
Don't know	13%
Refused	5%
Total	101%

[Percentages do not sum down columns to 100% due to rounding error]

The survey asked the participants how far they would be willing to drive for either a half-day or a full-day training course. The responses show that although people are willing to drive farther for a full-day course than a half-day course, driving distances greater than an hour will deter a majority of potential attendees.

Table 4.29: Distance Willing to Drive for a Training Course?-- Non-participant Survey

QNI5. If a new workshop were offered on a topic of interest to you, how long a drive would you be willing to take to attend a half-day workshop? QNI6. If a new workshop were offered on a topic of interest to you, how long a drive would you be willing to take to attend a full-day workshop?

Driving Distance	Half-day course (n=40)	Full-day course (n=40)
30 minutes or less	43%	18%
30 minutes < = 1 hour	30%	40%
1 <= 2 hours	18%	23%
> 2 hours	2%	5%
Don't know	5%	10%
Refused	2%	5%
Total	100%	101%

[Percentages do not sum down columns to 100% due to rounding error]

4.4.2 T-24 Awareness and Activities

The survey found a very low level of T-24 awareness and knowledge among the nonparticipants. Only a quarter of the respondents were even aware that T-24 Building Energy Efficiency Standards would be changing in October 2005 (Table 4.30). Furthermore, those who were aware of the change in standards did not rate their knowledge of these new standards very highly (Table 4.31). Only 20% rated their knowledge level as 4 or higher on a scale where 5 indicated "very knowledgeable."

Table 4.30: Aware of Pending Changes in T-24 Building Standards-- Non-participant Survey

QNQ1. Are you aware that new changes to California's Title 24 Building Energy Efficiency Standards will be in effect on October 1, 2005?

Response Category	Percent of Respondents (n=40)
Yes	25%
No	75%
Don't Know	0%
Refused	0%
Total	100%

Table 4.31: Rating on Knowledge about T-24 Building Standards-- Non-participant Survey

QNQ2. On a scale of 1 to 5, where 1 indicates "not at all knowledgeable" and 5 indicates "very knowledgeable," how knowledgeable do you consider yourself to be about the latest Title 24 building standards? [Only asked of those who were aware of changes in Title 24 building standards]

Response Category	Percent of Respondents (n=10)
5 – very knowledgeable	10%
4	10%
3	40%
2	20%
1 – not at all knowledgeable	20%
Don't Know	0%
Refused	0%
Total	100%

None of the 10 respondents who were aware that T-24 standards were changing had taken a course on the subject. Only three of these aware respondents said that they planned to take courses on the topic. All three said that they would likely take a T-24 course with the PG&E-ETC, although two of them also mentioned the California Building Industry Institute (CBII) and the State of California as other possible T-24 training options.

The survey asked the 10 respondents who were aware of the T-24 changes whether they are currently using any of the new T-24 standards in their business practices. Four of them said that they were. However, as discussed in Section 4.41, these types of responses must be viewed with some skepticism due to the low respondent knowledge of what the new T-24 standards will actually require and the difficulty of implementing the new standards due to the unavailability of design software.

Finally, the survey asked the six nonparticipants who were aware of the new T-24 requirements but had not yet begun to implement them when they planned to do so. Half of the respondents said that their businesses were not required to comply with these requirements. Two others said that they would wait until the October 2005 deadline and a sixth respondent said that he would comply in the next six months.

4.4.3 Interviews of T-24 Experts

The study also interviewed 10 experts on T-24 issues to find out:

- What they thought awareness and knowledge of the new T-24 regulations was among key market actors?
- Whether they thought any market actors were currently implementing the new T-24 standards?

- What educational and training options were currently available for training market actors how to comply with the new T-24 standards?
- When they thought that most market actors would become familiar with the new T-24 requirements?
- What more the PG&E-ETC and other energy training centers could do to get market actors ready for the new standards?
- What more other entities could do to get market actors ready for the new standards?

The experts that we interviewed included:

- Three T-24 instructors
- Three managers of energy training programs/centers that offer T-24 instruction
- One developer of T-24 software
- One HVAC trade association representative
- Two T-24 energy consultants and HERS raters.

Two of these experts managed training centers in Northern California that might represent competitive alternatives to the PG&E-ETC for T-24 training. Therefore, these experts were asked some additional questions about the nature of their T-24 courses. These questions covered:

- How current attendance levels at T-24 courses compare to expectations
- What barriers to attendance exist
- How they market their courses
- Who their typical attendees are and how these compare with those attending PG&E-ETC courses.

T-24 Awareness, Knowledge, and Training Opportunities. The experts were asked to assess the awareness and the knowledge levels of key market actors in regards to the new T-24 standards. Table 4.32 shows their assessments.

The experts were also asked when they thought that the key market actors would begin taking T-24 training classes. The general consensus was that architects, designers, energy consultants, HERS raters, and building departments would have to get educated sooner than the builders and installation contractors. One concern was that certified T-24 software was not yet available, and that it would take time for architects, designers, energy consultants, and HERS raters to master the new software. “It won’t be just a plug-and-play situation,” an expert noted.

A number of experts observed that interest in classes had recently picked up and guessed that most market actors would start taking classes in the summer of 2005. However, two classes of market actors – builders and installation contractors – were identified as being most likely to delay their training. A couple of experts thought that some builders would never take classes on T-24 but would instead rely on their energy consultants for compliance. One expert noted that the summer was a busy period for HVAC contractors and this might cause many contractors to delay their training until the fall. However, another said that “while there is no big advantage for builders to be the first ones out of

Table 4.32: Expert Assessment of T-24 Awareness and Knowledge Among Key Market Actors

Market Actor Group	Awareness/ Knowledge Profile
Builders	▪ Some are aware that T-24 changes are coming but general level of knowledge is very weak ▪ Many builders depend heavily on their designers and energy consultants to know the implications of Title 24 and therefore feel no need to learn more. ▪ "Design and Build" builders are generally more knowledgeable than "Plan and Spec" builders, unless they subcontract out the design portion of their work. ▪ Large production home builders are likely more knowledgeable than smaller custom home builders. This is because they are larger, they interact more with building departments and building codes, and they think more about the long-term.
Architects/ Designers	▪ This group is fairly aware that the T-24 changes are coming, but most do not know the details. ▪ The unavailability of approved T-24 software from EnergyPro and Micropas has slowed down their knowledge of the new changes. ▪ The T-24 changes have forced them to consult more with energy consultants and HERS raters than they have in the past.
Building Departments	▪ Knowledge and awareness is growing due to the educational efforts of CALBO. ▪ However, there are still some building departments that are totally unaware of the new changes.
Energy Consultants	▪ Awareness level is high although more knowledge of the details is needed. ▪ Unavailability of approved T-24 software has hindered the pace of their learning.
HERS Raters	▪ Awareness level is high although more knowledge of the details is needed.
Installation Contractors (HVAC and lighting)	▪ Both knowledge and awareness for this group is fairly weak, but this market actor group tends to be reactive rather than proactive. ▪ Skills that HVAC contractors particularly need to work on include installation of insulation and working with HERS raters. ▪ Some experts said that Southern California HVAC contractors are more knowledgeable than Northern California contractors due to greater educational efforts by trade associations.

the block, a few installation contractors may see a competitive advantage in being able to advertise T-24 capabilities."

The experts pointed to a number of things that would increase market actor interest in taking T-24 training courses. One was the availability of approved T-24 software from EnergyPro and Micropas. A related development was the recalculation of budget estimates based on the new T-24 standards. "When the energy consultants and designers start showing the Title 24-compliant budgets to their homebuilders, that will be a major trigger of interest in Title 24," said one expert. "The homebuilders are going to be wondering why it will cost so much more to build than it did in the past."

Many of the experts predicted that there would a big push by builders to get their building projects approved under the old standards. "I wouldn't want to be around a building department in September," one of them said. However, one expert thought that fears of a permit rush were exaggerated. He noted that it can be quite expensive to pull a permit and believed that even rich builders would not want to risk this. When the T-24 standards were last changed in 2001 there was a 6-month grace period for production builders. However, the experts did not think that there would be a grace period for the 2005 changes.

According to the experts, a major driver of increased T-24 education will be the efforts of trade associations such as The California Association of Building Energy Consultants (CABEC), California Building Officials (CALBO), and Industry of Heating & Air Conditioning Industries, Inc. (IHACI). The trade associations are expected to be more involved either in educating their members directly, sponsoring trainings conducted by others, or notifying their members of training opportunities elsewhere. IHACI has already sponsored a number of T-24 training sessions for HVAC contractors and CABEC representatives said that they would start T-24 training soon. A couple of experts said that the activity of IHACI in Southern California has meant that HVAC contractors in this region are more aware of the T-24 changes than their Northern California counterparts.

The experts were asked what T-24 education and training opportunities they were aware of besides those offered by the electric and gas utilities. The only active non-utility training sessions they could name included those offered by CHEERS, IHACI and the California Building Industry Institute (CBII). However, they noted that CABEC training sessions would be starting soon. Various experts cited the California Energy Commission (CEC), CALBO, EnergyPro, The U.S. Green Building Council, major HVAC distributors, and major lighting distributors as likely offerors of T-24 training in the near future.

Early Adoption of the T-24 Standards. The experts were unanimous in believing that it was highly unlikely that there are currently any early adopters of the new T-24 building standards. A number of them observed that builders who were currently building to ENERGY STAR, Engineered for Life™, or Quality Built building standards might approach new T-24 standards in some areas, but they could never really be sure until certified T-24 software was available. Many pointed to the unavailability of certified

software as a major barrier to early adoption. Although beta versions of T-24 software are circulating, they noted that it would be risky to design a building based on uncertified software. The high cost of the lighting requirements in the new T-24 standards was cited as another barrier to early adoption.

What the PG&E ETC Can Do to Encourage T-24 Training. The experts were asked what the PG&E-ETC could do to encourage more market actors to take T-24 training. They were also asked for their opinions on two things that PG&E-ETC is currently trying, or considering trying, to increase attendance at its course. These include the mobile training center and a tool lending library.

The mobile training center – The experts all thought that a mobile training center was a good idea. A number of them said that the PG&E-ETC's location in Stockton was inconvenient for many market actors. "Many builders and contractors in the Silicon Valley and the North Bay do not want to travel all the way to Stockton," said one expert. A number of them pointed to driving distance as a major barrier to training sessions in general. One expert recalled that when his ASHRAE chapter holds training sessions, they often hold it in three different locations because the traffic in Los Angeles is so bad. "Most contractors are not willing to drive that far," he said. Another expert noted that while the mobile classes might be smaller than those at the PG&E-ETC, if they were held at a company's building site the participants would feel more comfortable in their home environment.

The tool lending library – The experts were less enthusiastic about the idea of using tool lending as an incentive to encourage energy training participation. One found it "intriguing" but thought it was "definitely not the driver of all drivers." He suggested that it could be more effective if the PG&E-ETC first demonstrated the equipment on the company's building site. For example, the PG&E-ETC could bring a skilled person with a duct blaster to the construction site so that the installers could see how the equipment worked. He thought that if they could see the equipment used in the proper context, the installers would see more value in borrowing the tools. Another expert argued that the tool lending would not be that effective as a way to attract T-24 training attendees because the people who were mostly likely to want to borrow the tools – HERS raters – would have already taken T-24 training.

One expert noted that CHEERS had considered the tool lending idea but had ultimately rejected it. He said that there were a number of concerns, including the risk that contractors might not return the tools, the chance that contractors who had invested in such tools might resent those who were getting them for free, and the possibility that contractors might use the unavailability of tools at the library as an excuse not to use them. He thought a better idea would be for California utilities to pool their resources and purchase this equipment at a volume discount. They could then sell this equipment to the contractors at a discount or provide financing for the contractors to purchase the equipment.

New education and training ideas – The experts recommended a number of ways to vary the format of T-24 education. One idea was to conduct web-based seminars. While these would not be able to provide the same hands-on experience as the on-site classes, they could at least give some market actors a good idea of the implications of the new standards. This knowledge might be enough to encourage them to drive to Stockton. Another suggestion was for PG&E-ETC to collaborate on a "Title 24 for Dummies" book that could introduce market actors to the basics of T-24.

The experts also suggested additions to the content of T-24 training that would make it more appealing. One suggestion was that energy training centers like PG&E-ETC needed to do more to make subjects like T-24 relevant to the businesses of market actors, especially smaller HVAC contractors. One expert who has conducted some T-24 training said that contractors want to know the answers to questions such as is T-24 a threat or an opportunity? How do I turn T-24 knowledge into a competitive advantage? How do I sell T-24 to my customers? He thought that sales training should be a component of T-24 training. He believed that if training centers like the PG&E-ETC can sell T-24 knowledge as something relevant to the contractor's bottom line, then interest in training classes will increase.

Offering a wider range of T-24 classes was another suggested improvement. One T-24 instructor said that he had learned that one T-24 class was not sufficient. "Often it can take a full day just to cover what T-24 is and what the new changes will be," he said. "Additional classes are needed to show contractors how to implement the changes." He advocated "baby steps." "You don't have to hit them over the head with all the information at once," he said. "Hands-on training with duct blasters is important, but you can work towards this with interim educational steps." He suggested a modular approach in which all market actors could begin by taking a course that would provide a basic and general introduction to the T-24 changes. Then they could take subsequent courses that were more appropriate for their specialties.

New marketing strategies – A number of experts thought that more marketing was the needed to increase attendance. They thought that training centers like PG&E-ETC relied too heavily on direct mail. "I'm not a big fan of just paper marketing," said one expert. Another noted that there are so many similar course calendars out there that contractors get confused. In fact, he believed that there would be great value if all the available training courses could be listed at a single location – possibly the CEC website.

The experts recommended that the PG&E-ETC work more closely with trade associations that represent the major market actors such as CABEC, IHACI, and the American Institute of Architects (AIA). They noted that these trade associations are always looking for guest speakers and that training center people should attend the monthly trade association meetings. One expert recommended that the PG&E-ETC consider joint sponsorships of training with these associations, much as IHACI has done in Southern California. These trainings could be advertised by mailings using the trade association letterhead with the PG&E-ETC and the trade association sharing the mailing costs. Another recommendation was for Energy Center staff to write T-24 articles for

trade association journals. "Builders and installers are more willing to listen to information presented by their own organizations," said one expert.

They also suggested other means, besides the trade associations, to reach key market actors. International Code Council (ICC) meetings, which always have many attendees from the building profession, were cited as another opportunity for training center staff to educate builders about T-24. Working with major HVAC "supply houses" – which many HVAC contractors rely on as major sources of information – was another way to educate market actors. Finally one expert pointed to the mortgage and insurance industries, which work closely with new homebuilders, as an alternative way to disseminate T-24 education.

Finally, the experts recommended ways to enhance PG&E-ETCs's direct mail efforts. One suggestion was to send out newsletters to targeted market actors that contain T-24 success stories. These stories could highlight builders or contractors who were gaining competitive advantages or avoiding problems down the road by getting T-24 training now. This direct-mail campaign could be supplemented with targeted e-mail campaign.

Economic incentives for taking classes **–** One expert suggested that the utilities make some of the financial incentives that they provide to builders for energy efficient practices be contingent upon attendance at a T-24 training class. A T-24 instructor suggested that the fact that the PG&E-ETC classes were free could paradoxically be a disincentive for some market actors to attend. He noted that some market actors devalue classes because they are free or do not show up because there is no financial penalty. He said that his training center has found that charging a fee for a class that was formerly free can actually increase attendance.

How the T-24 Experts Prioritized the Recommendations

After all the T-24 experts had been surveyed, they were sent a matrix containing all the recommendations for increasing T-24 awareness, encouraging T-24 training, and improving the PG&E-ETC T-24 offerings. The experts were asked to provide ratings for these recommendations using a scale of 10 to 1 where 10 equaled "Completely Agree" and 1 equaled "Complete Disagree." They were also asked to comment on these ratings. Six of the 10 experts provided ratings for these recommendations.

Table 4.33: Expert Rating of Recommendations for Increasing T-24 Awareness and Encouraging T-24 Training

Recommendation	Average Expert Rating (s.d.)	Notable Comments
Make T-24 presentations at trade association and ICC meetings and write T-24 articles for trade association journals.	9.4 (0.9)	"The audiences at these events are the people you need to reach." "This is one of the best ways to engage this population." "This would be useful as long as the author or presenter of the information is truly expert. Perhaps the material should be reviewed by a group of experts before publication." "Co-branding with a trade association has been beneficial for program growth."
Work with the CEC and other California Energy Centers to create "one-stop shopping" for T-24 training information. The CEC website would be the logical place for such a calendar.	8.1 (1.5)	"One source for training information would be valuable." "Should be easy to implement but will only work if potential audience is aware of and motivated to visit the CEC website." "This would be very useful to regular market actors but might not reach everyone that needs training."
Work with HVAC supply houses to disseminate T-24 information.	7.7 (1.9)	"Could be useful. I know some of the info presented at supply house presentations is incomplete or misleading concerning T-24 requirements. Participation by a T-24 expert could add a lot to content." "Best method of reaching HVAC contractors, but not effective for builders or building department staff." "This may not be the most effective means as there is not a lot of control on what they disseminate."
Do a targeted T-24 mailing to key market actors. This mailing would emphasize the importance of the impending T-24 standards and would feature "success stories."	7.3 (1.9)	"Probably effective, I'm just not 100% sure." "Mailings can be expensive and are difficult to distinguish from the piles of junk mail that come every day. Whether a mailer is read or not probably depends a lot on whom the mailing is coming from." **"**The major challenge to this approach will be to get the contractor to take the time to read it."
Work with the CEC and other California Energy Centers to create a "Title 24 for Dummies" booklet.	5.9 (1.7)	"Might be useful, but by necessity could only be an overview and would have to be revised regularly to reflect code changes and interpretations." "Sounds like this might be useful. I could send to my clients basic information that was accurate and standardized." "Maybe. There is lots of introductory training available. Those that asked for this may not be aware of what is already available." " A few market actors are already doing this, i.e. CLTC (CA Lighting Technology Center) is authoring a T24 Lighting Design handbook for residential. SMUD and major IOUs are involved."
Work with second tier market actors such as mortgage and insurance companies to increase T-24 awareness.	3.7 (1.6)	"I don't know how much these entities would really care and thus whether they would have any impact on the real decision makers." "I do not see much action coming from this approach."

Table 4.34 Expert Rating of Recommendations for Improving PG&E-ETC T-24 Course Offerings

Recommendation	Average Expert Rating (s.d.)	Notable Comments
Continue and even expand the PG&E-ETC's mobile training component.	8.3 (1.4)	"Stockton is difficult and time consuming for many of us to get to, especially for short classes. More regional or local presentations would be very beneficial." "This is a great idea." "Varied useful training is always a help. Getting to training classes is always a problem. More classes and sites would help." "Could help small contractors and engineers." "It would be better to partner with other energy centers than create stand-alone PG&E workshops in overlapping territories; the benefits would be to leverage resources for marketing and implementation as well as solidify business relationships among energy centers."
Make the new T-24 standards more relevant to the bottom line of businesses in both marketing messages and course content. Training on how to sell T-24 services would also be a useful addition to class content.	7.7 (1.8)	"Yes, incorporate financial aspects of T-24 Standards, both the long and short term benefits as well as realistic short term cost of tougher new standards. But I don't really see training on how to sell T-24 services as an appropriate subject for training by the utility." "Most developers, architects, contractors think of T-24 as just another layer of government regulations they must comply with. Not always considering the benefit to their buyers." "It is usually about the money." "This a crux of the Title 24 standards, and in many cases contractors are not sold on the benefits and the good business reasons to comply. This is vital."
Consider a wider variety of T-24 course offerings, especially introductory courses that teach market actors "to walk before they can run."	7.0 (2.8)	"A short class for non-T-24 consultants could be useful for introducing changes to builders, designers, owners, etc. However, there is some question whether they would attend such a class unless it were in conjunction with a meeting of their professional association or connected to a trade show, or unless significant incentives or door prizes were offered." "Need this type of training statewide." "The number of different class offering is really wide already." "Yes, you would do this early on. Closer to the deadline, you would provide more intensive, specific training for target markets."
Explore the possibility of supplementing T-24 training center courses with web-based seminars.	6.4 (1.3)	"Web seminars might be good, depending on the structure and the presentation. Certainly the ability to access the material at any time from any location would be a great benefit." "Probably be a help for those with high-speed internet access." "Clearly the wave of the future." "I am not sure whether contractor for example would be all that receptive but perhaps distributors would."

How the PG&E-ETC T-24 Courses Compares to Those Offered by Other Area Training Centers

As noted, two of these T-24 experts managed training programs in Northern California that might represent competitive alternatives to the PG&E-ETC for Title 24 training. Therefore these experts were asked some additional questions about their T-24 courses.

These interviews, which were conducted in November and December 2004, revealed that these other training programs shared PG&E-ETC's concerns about lower-than-expected attendance at T-24 courses. They offered a number of theories as to why key market actors were not attending T-24 classes. One theory was that lower interest rates had led to a building boom in California, and this meant that builders were simply too busy to take training courses. Another theory was that HVAC contractors have little motivation to improve the quality of their installation practices because neither construction companies nor municipal building departments are putting pressure on them to do so. Finally, they cited lack of awareness of changes to the new T-24 rules as another factor in low attendance. They thought that interest in T-24 courses would increase as the October 2005 deadline approached.

Interestingly these training program managers did not view PG&E-ETC's T-24 training courses as competitors to their own. One training program manager said that his courses were directed at builders and building officials/inspectors – both in course content, delivery approach (actually providing training on the construction site), and marketing approach (cold calls to builders). In contrast, he believed that PG&E-ETC's course content and marketing approach was more geared towards building subcontractors. Therefore, he saw the two training programs as serving two different sets of market actors.

The other training program manager also contrasted the hands-on training format of the PG&E-ETC with her own training program's classroom approach. She said that her training program tries to coordinate with the PG&E-ETC when conducting trainings in similar geographic areas. "In general, we are really not too competitive with PG&E-ETC," she said. In fact, she thought that her program's own educational offerings and those of PG&E-ETC's could be complementary. For example, because the PG&E-ETC in Stockton is fairly close to her own training center, she has in the past recommended the PG&E-ETC as an alternative when there is an oversubscribed course.

4.5 Summary of the Findings

4.5.1 Participant Findings

- **PG&E-ETC T-24 ADDT course attendees were very satisfied with their training** - More than 80% of the T-24 Air Distribution Diagnostic Testing (ADDT) course attendees gave satisfaction ratings of four or greater (5 indicated "very satisfied") for four different attributes of the course. Satisfaction ratings were particularly high for the performance of the course instructors.

- **PG&E ETC course attendees said that the training course greatly increased their skill level** – T-24 ADDT course attendees rated their average post-course performance level at 75% on a scale where 100% indicated "outstanding/exemplary performance." This compares with an average pre-course performance level of 35 percent.
- **General PG&E-ETC course attendees were very aware of the new T-24 changes but not very knowledgeable about the details** – At total of 85% of the respondents said that they were aware of the impending T-24 changes. However, only a quarter of the respondents rate their knowledge level as four or greater on a scale where 5 indicates "very knowledgeable."
- **A large majority of attendees at general PG&E-ETC courses said that they would take a T-24 course in the near future** – Over two-thirds of those who were aware of the new T-24 standards said that they planned to take a course on the subject. Of those planning to take a course, over 80% said that they planned to take a course with a PG&E Energy Center – although the ambiguity of some of the open-ended responses made it difficult to determine whether the respondent planned to take this course with the PG&E-ETC or the PG&E-PEC.
- **Lack of knowledge and driving distance were barriers to attendance at PG&E-ETC T-24 courses.** The survey also asked the 16 respondents who planned to take their T-24 courses with someone other than PG&E-ETC why they had not chosen the PG&E-ETC for their courses. Lack of awareness that the courses were being offered and driving distance were the two most-cited reasons.
- **Some PG&E general attendees said they were already incorporating new T-24 standards in their business practices, but these claims must be viewed with caution.** Nearly half of the respondents said that they were already using the new Title 24 standards in their business practices, but these responses must be viewed with some skepticism. First, most of these respondents had not rated their knowledge of the T-24 standards very highly. Second, the expert interviews indicated that the likelihood of builders or contractors actually incorporating the new T-24 standards at this early stage was very unlikely. This is not only due to cost considerations but also because approved design software for incorporating the new T-24 standards is not yet available. It is also possible that some of the respondents were talking about existing T-24 requirements rather than the new ones.

4.5.2 Nonparticipant Findings

- **Information about the PG&E-ETC is not getting out to potential participants.** More than half the respondents did not recall receiving the PG&E-ETC course list, and a similar percentage had not even heard of the PG&E-ETC.
- **Direct mail was the primary information source for those who had heard of the PG&E-ETC.**
- **A trade journal was the most cited way that nonparticipants currently get information about energy efficiency. However, a majority identified direct mail as the preferred means for getting PG&E-ETC information in the future.**

- **Driving distance was the top reason why aware nonparticipants had not taken a course at the PG&E-ETC.** The survey asked the respondents who were aware of the PG&E-ETC but had never taken a course there, why they had not done so. The perception that the PG&E-ETC was too far away was the most cited reason, although there was a wide range of reasons.
- **Driving distances greater than an hour will deter a majority of potential PG&E-ETC attendees.**
- **Nonparticipants said that a mobile training facility would make them more likely to take a course at the PG&E-ETC.** A total of 65% of nonparticipants said that it would make them more likely to take a course.
- **Morning is the preferred time period for energy trainings, but there are no strong preferences for a particular day of the week.**
- **Awareness and knowledge of the new T-24 changes is very low among nonparticipants.** Only a quarter of the respondents were even aware that T-24 Building Energy Efficiency Standards would be changing in October 2005. Furthermore, only 20% of those that were aware of the change in standards rated their knowledge level as four or higher on a scale where 5 indicated "very knowledgeable."
- **Most nonparticipants are not interested in energy training courses.** When nonparticipants were asked whether there were any energy-related skills or areas of knowledge that they wished they could receive training in, only a third said yes. However, this lack of interest is at least partly a result of lack of knowledge. Since so few of the market actors know that T-24 standards are changing, it is understandable that they would not identify this as a knowledge gap that they need to fill.
- **But many nonparticipants are interested in learning more about energy.** Three-quarters of the respondents suggested energy-related skills or knowledge areas they would like to learn more about. This suggests that while only a minority feels a need to take outside training on energy-related topics, a large majority have some interest in "learning" more about such topics. Therefore, there may be some opportunities for Energy Centers like PG&E ETC to offer some less time-demanding education and training such as web-based learning or trade journal articles.

4.5.3 T-24 Expert Findings

- **Awareness of the new T-24 changes among key market actors is low but growing.** Architects, designers, energy consultants, HERS raters, and building department officials are generally more aware than builders and HVAC contractors.
- **Knowledge of the details of the T-24 changes is low, in part due to the unavailability of certified T-24 design software.**
- **Most market actors will wait until the summer of 2005 to take T-24 courses.**
- **A major driver of T-24 education will be an expected increased involvement of the trade associations.** These trade associations will either educate their

members directly, sponsor trainings conducted by others, or notify their members of training opportunities elsewhere.

- **It is unlikely that there are many early adopters for the new T-24 building standards.** Many experts pointed to the unavailability of certified software as a major barrier to early adoption.
- **Most experts believed there would a big push by builders to get their building projects approved under the old T-24 standards.**
- **The experts could only name a handful of current T-24 training opportunities outside those offered by the utilities.** These included courses offered by CHEERS, IHACI and the CBII. However, they named many organizations and companies that they thought might offer T-24 training in the near future.
- **The experts all thought that a mobile training center was a good idea for PG&E ETC.** A number of them said that this was because the PG&E-ETC's location in Stockton was inconvenient for many market actors.
- **The experts were less enthusiastic about using tool lending as an incentive to encourage training participation.**
- **New education and training ideas and marketing strategies.** The experts recommended a number of ways to improve or supplement PG&E-ETC's existing T-24 training offerings and marketing strategies. These are summarized in the next section.
- **Interviews with two Northern California T-24 training program managers revealed similar concerns about low attendance.** These interviews, which were conducted in November and December 2004, revealed that these other training programs shared PG&E-ETC's concerns about lower-than-expected attendance at T-24 courses. They offered a number of theories as to why key market actors were not attending T-24 classes including a recent boom in California construction, low awareness of the new T-24 building standards, and a general lack of pressure by builders and building officials to improve the quality of the work performed by building subcontractors.

4.6 Conclusion and Recommendations

This case study had two important objectives. One main objective was to find out why more people were not taking T-24 courses. This part of the case study was designed to assess a number of possible barriers to participation, including dissatisfaction with the course, lack of awareness of the PG&E-ETC and its course offerings, competition from other training centers, and concerns about driving distance. It was also designed to collect information about the training practices and preferences of nonparticipating market actors. This included their reactions to PG&E-ETC approaches – such as adding a mobile training capability – designed to increase participation.

Another important objective of the case study was to help the PG&E-ETC prepare for changes in the T-24 rules that will go into effect in October 2005. These rule changes will create a new need and demand for T-24 training, and it is important that the PG&E-ETC

be ready to effectively meet this new demand. This part of the case study was designed to find out how aware and knowledgeable market actors were of the new T-24 rules. It was also designed to collect information about any intentions these market actors have to receive training on the new T-24 rules, including the likely timing and source of such training. The case study also planned to supplement this information from the market actors with information from a group of T-24 experts. The study would ask these experts to assess the general level of knowledge/awareness of the new T-24 rules among the key market actors and the likely timing of any demands for training. It would also ask them how PG&E-ETC (and others in California) could increase awareness of the new T-24 rules and how the PG&E-ETC could change the content or delivery method of its T-24 courses to better meet the new training needs.

4.6.1 Conclusions

Why the PG&E-ETC Is Not Getting More Attendees at Its T-24 Courses

The evidence pointed to a couple of reasons why more people are not taking T-24 courses at the PG&E-ETC. These include:

- **Low awareness of the PG&E-ETC.** Only 43% of the nonparticipants had even heard of the PG&E-ETC, even though all of them were sent a PG&E-ETC course brochure.
- **The PG&E-ETC is not located in a convenient location.** Nearly half of the nonparticipants who were aware of the PG&E-ETC cited the fact that the Energy Center was too far away as their reason for not taking a course there. Driving distance was also a major reason why PG&E general attendees had not taken a T-24 course with the PG&E-ETC. Survey data from both the nonparticipant and attendee survey show that most market actors are unwilling to drive more than one hour to a training course, even for a full-day course.

The evidence did not support two possible alternatives explanations for low PG&E-ETC course attendance: dissatisfaction with the course or competition from other T-24 training courses. As noted, satisfaction with the featured T-24 course was very high, and therefore any word-of-mouth publicity for the program would likely be very positive. Although there are alternative T-24 training courses available in the PG&E area, interviews with these training centers indicated that they are experiencing some of the same problems with low attendance as the PG&E-ETC.

When Attendance at T-24 Training Courses Is Likely to Increase

The general consensus of the T-24 experts was that architects, designers, energy consultants, HERS raters, and building departments would likely get educated about the new T-24 standards sooner than builders and installation contractors. A number of experts observed that interest in T-24 classes had recently picked up and guessed that most market actors would start taking classes in the summer of 2005.

The experts pointed to a number of drivers, besides the approaching deadline, that should accelerate interest in the T-24 courses. One important driver for architect, designers, energy consultants, and HERS raters will be the availability of certified T-24 software.

An important driver of T-24 education for all market actors will be the efforts of trade associations such as CABEC, CALBO, and IHACI. Experts expect the trade associations to become more involved in the near future either in educating their members directly, sponsoring trainings conducted by others, or notifying their members of training opportunities elsewhere.

Two classes of market actors – builders and installation contractors – were identified as being most likely to delay their training. Many builders rely heavily on their energy consultants for T-24 compliance, and some may never take T-24 training course for this reason. The experts cited a number of reasons why installation contractors are likely to delay their training. First, they identified this market actor class as generally being reactive rather than proactive about changes in energy-efficiency standards. Second, they noted that the summer is a very busy period for installation contractors, and this may cause them to delay their training until the fall. Finally, since installation contractors are involved in T-24 implementation rather than T-24 design, many contractors believe that there is no urgency for them to get T-24 training much before the October 2005 deadline.

4.6.2 Recommendations

What the PG&E-ETC Can Do To Increase Attendance at Its T-24 Classes

Increase Awareness and Knowledge of the T-24 Changes and the PG&E-ETC Itself. The main reasons why market actors are not taking T-24 courses is that they do not know enough about the pending T-24 rule changes and the implications for their businesses. Many trade associations are just beginning their T-24 education campaigns. These campaigns represent great opportunities for the PG&E-ETC to promote general awareness while also advertising its special expertise to key market actors. The following educational and marketing initiatives are ranked in order by the average rating given to them by the panel of T-24 experts:

- **Make T-24 presentations at trade association and ICC meetings and write T-24 articles for trade association journals.** This was the top recommendation of the T-24 experts (average rating of 9.7 on a 10-point scale) for increasing T-24 awareness. The experts said that market actors are more willing to listen to information presented by their own trade associations. ICC meetings represent a unique opportunity to get access to builders. One expert noted, however, that it is important that the people giving the presentations or writing the experts are truly expert. He suggested that other experts review presentation materials beforehand.
- **Work with the CEC and other California Energy Centers to create "one-stop shopping" for T-24 training information.** This was the second-most popular recommendation of the T-24 experts (average rating of 8.0 on a 10-point scale) for increasing T-24 awareness. A unified calendar listing all the T-24 training opportunities available across the state would be useful for market actors. The CEC website would be the logical place for such a calendar. However, some

experts expressed reservations because some market actors are not aware of the CEC website.

- **Do a targeted T-24 mailing to key market actors**. This mailing would emphasize the importance of the impending T-24 standards and would feature success stories. These might be builders or contractors who are avoiding problems down the road by getting T-24 training now. The T-24 experts gave this recommendation an average rating of 7.7 on a 10-point scale. They had concerns that this mailing would be mistaken for "junk mail." "Whether a mailer is read or not probably depends a lot on whom the mailing is coming from," one expert commented. Therefore another expert claimed that the effectiveness of the mailing would be increased if it was done in cooperation with trade associations. For example, the information might be sent under the cover letter of a number of different trade associations, with postal costs shared among the participating organizations.
- **Work with HVAC supply houses to disseminate T-24 information.** The T-24 experts gave this recommendation an average rating of 7.7 on a 10-point scale. Experts noted that HVAC contractors rely a lot on these companies for energy-efficiency information. However, they also observed that this information channel would not very helpful for builders and building department staff. Another expert was also concerned because there would be limited control over how the HVAC supply houses disseminate the T-24 information.
- **Work with the CEC and other California Energy Centers to create a "Title 24 for Dummies" booklet**. This recommendation received an average rating of 5.5 on a 10-point scale. Some experts thought that this would be a user-friendly way to introduce many market actors to the basics of the new T-24 rule changes. They believed that this introductory knowledge could encourage some market actors to take more in-depth training. However, other experts had concerns about keeping such a book up-to-date or thought that good introductory information was already available through training courses.

Work to Overcome Geographic Barriers. Many market actors said that the PG&E-ETC was too far away, and there was a general reluctance of market actors to drive for more than one hour to any training course. Possible ways that the PG&E-ETC could help overcome these geographic barriers include:

- **Continue and even expand the PG&E-ETC's mobile training component.** This was the top recommendation of the T-24 experts (average rating of 8.3 on a 10-point scale) for enhancing the PG&E-ETC's T-24 course offerings. "Stockton is difficult and time consuming for many of us to get to, especially for short classes," one expert commented. "More regional or local presentations would be very beneficial." The T-24 experts recommended both on-site trainings as well as classroom trainings in locations besides Stockton. As noted, the mobile training component was also a popular option in the market actor surveys.
- **Explore the possibility of supplementing T-24 training center courses with web-based seminars.** Web-based seminars might be useful for providing market actors with a basic introduction to the new T-24 rules. This knowledge might be

enough to encourage market actors to take more in-depth courses. The T-24 experts gave this recommendation an average rating of 6.5 on a 10-point scale. They agreed that the delivery mechanism would be convenient for some – especially for those with high-speed Internet connections. One expert called this "the wave of the future." However, others cautioned that the effectiveness of the web-based seminars would depend a lot on their structure and content. They also noted that these web-based courses could not be a substitute for hands-on training.

Enhance course content and options. Many of the T-24 experts praised the kind of instruction that the PG&E-ETC T-24 training courses offer, but they noted that the appeal of this detailed, hands-on knowledge was inherently limited. Possible ways to broaden the appeal of the PG&E-ETC T-24 courses include:

- **Make the new T-24 standards more relevant to the bottom line of businesses in both marketing messages and course content.** A number of T-24 experts believe that market actors will be more likely to take T-24 training if they have a better idea of the financial benefits of early T-24 training as well as the financial penalties of waiting too late. This was the second highest rate recommendation of the T-24 experts (average rating of 7.5 on a 10-point scale) for enhancing the PG&E-ETC's T-24 course offerings. While some experts thought that training on how to sell T-24 services would also be a useful addition to class content, others thought that this would be inappropriate for a course taught by a utility.
- **Consider a wider variety of T-24 course offerings**. Many experts emphasized the important of market actors "learning to walk before they can run." They noted that although hands-on training on how to implement new T-24 requirements is important, there is also a need for more basic instruction on what the T-24 changes are and what the larger implications will be. This recommendation received an average rating of 7.0 on a 10-point scale. One expert questioned whether market actors would take such an introductory course unless their trade association offered it, it was offered at a trade show, or there were incentives for attendance such as door prizes. Another expert thought that were plenty of options for such introductory courses already available.

5 Southern California Edison Agricultural Technology Application Center Case Study "Measuring Soil Moisture Content"

5.1 Introduction

5.1.1 Background

Southern California Edison (SCE) operates a training center in the San Joaquin Valley known as the Agricultural Technology Application Center (AGTAC). AGTAC provides customers information on energy-efficient options through an array of workshops, exhibits and interactive displays of lighting, HVAC, motors, variable-speed drives, and pumping technologies.

Among the courses offered at AGTAC is a workshop titled "New Techniques for Measuring Soil Moisture." This course addresses technologies for both energy efficiency and water conservation in agricultural motor and pumping end uses. This course has been available for several years, although it is only offered in alternate years. Topics covered in the workshop included soil moisture science as well as a discussion of the advantages and disadvantages of commercially available technologies. The course also discusses how more precise watering can lead to less overall pumping costs and may improved crop yield.

In 2003, the course addressed the agricultural market, but consideration is being given to offering the course to nonagricultural segments as well in 2005.

5.1.2 Case Study Objectives

Research priorities for this case study included the identification of approaches to increase participation by agricultural customers as well as assessing the potential for attracting customers from additional selected market segments. Possible new target markets identified for this workshop include ornamental agriculture, golf courses, parks and recreational facilities, and other large turf facilities. This research was conducted to achieve the following goals:

- Investigate levels of interest among potential target customers
- Identifying factors of importance in attracting new target market segments for expansion of this program
- Identifying factors that generate participant interest in the seminar
- Examining how this course can be modified to be applicable to a broader market
- Identifying methods for reaching customers about AGTAC workshops.

5.2 Course Description

This workshop provides information on the latest technologies in soil moisture sensors, their advantages and disadvantages, and how to use them. Information is provided on soil moisture, soil moisture tension, and crop response to soil moisture. Guidelines are

provided for irrigating based upon soil moisture content or soil moisture tension. The workshop includes demonstrations on installing sensors and taking readings from them.

The 3-1/2-hour morning course was offered at no cost in March of 2003.

5.3 Methodology

Evaluation of this workshop began with interviews of AGTAC personnel as well as the course instructor, supplemented by a review of available program documents. Primary research activities undertaken included:

- Interviews of participating customers
- Surveys of eligible customers
- Interviews of potential partner organizations.

More detail on each of these tasks follows.

5.3.1 Phone Interviews of 2003 Participants

Six of the 15 customer participants of the 2003 workshop were interviewed by telephone to examine their reasons for attending this workshop and to elicit recommendations for future workshops. Specifically, attendees were asked to provide suggestions for the workshop. These included: should the workshops be expanded to other areas, recommendations for how to market program, recommendations on venue, instructors, and possible co-sponsoring or partnering organizations.[10]

5.3.2 Phone Survey of Target Population

Forty-five telephone surveys were completed with eligible customers to guide AGTAC planning around workshop promotion and market targeting. This survey addressed the following issues:

- Awareness of AGTAC workshops
- Reasons for nonattendance
- Level of interest in attending a workshop on energy efficiency and water management topics
- Factors affecting likelihood of attendance
- Necessary content to provide value to target population
- Appropriate methods for reaching this target population
- Timing/scheduling preferences
- Barriers to participation
- Suggested topics for future workshops.

[10] The scope of work had initially called for completing up to 10 participant interviews. This number had to be reduced to 6 due to several factors, including the limited number of participants (15), the large representation from a single institution (6 of the 15), as well as 2 bad phone numbers. In addition, one of the workshop participants was from an organization addressed in the last evaluation task and was reassigned to that task (interviews of potential partner organizations). The sample frame was developed from AgTAC program records.

The sample frame reflects a mix of customers targeted previously (food agriculture operations) and customers identified as prospective targets for the coming year (golf courses, ornamental agriculture, institutions and public lands with large turf areas or other irrigated land). The list of target SIC groups was developed in consultation with the personnel at AGTAC. The types of businesses represented in this study population included:

- Food agriculture
- Ornamental agriculture (nurseries, garden supplies)
- Golf courses and country clubs
- Public parks, gardens, arboretums
- Schools, colleges, universities.

The sample frame was developed from a purchased list augmented with information from Internet sources.

5.3.3 Interviews of Possible Partner Organizations

To develop further information on target market groups and possible promotional options, telephone interviews were completed with membership organizations serving the identified target market groups. Topics covered included: perceived need for workshops of this type, perceptions of best market segments to target, recommended methods for promoting workshop to identified target markets, willingness to co-sponsor future workshops or to assist with promotion and outreach, and recommendations with respect to topic coverage, and scheduling.

Interviews were complete with the following organizations:

- Kings County Farm Bureau
- Kings River Conservation District
- Tulare County Farm Bureau.

We were unable to complete interviews with other irrigation or water management agencies targeted for this research.[11] The sample frame for this task was developed from referrals as well as Internet sources.

5.4 Findings from Internal Sources

Findings reported in this section are derived from information gathered during telephone interviews and a review of available internal documents. Interviews were completed with the AGTAC Program Project Analyst and the course instructor. Documents reviewed included course descriptions, attendance tracking forms, marketing materials, website course descriptions and registration content, surveys of attendees, and ETS tracking data.

[11] Repeated attempts were made to conduct interviews with the California Urban Water Council and the Agricultural Water Management council. Several calls were made to these offices, along with e-mail follow-up in one case, explaining the nature and intent of the call. This activity was terminated after repeated attempts to complete this task, so as to cap expenditures on an unproductive exercise.

5.4.1 Program Implementation

As the name indicates, the original intent of the Agricultural Technology Center was to address the farm community and to offer services to the central region of the state. Indeed, this center is well situated to serve the agricultural market, as it is located in the largest growing area in the state. Over time, additional services were offered, not all specifically targeted to agricultural customers.

A variety of courses are offered throughout the year, covering all the major electrical end uses as well as irrigation technologies. In 2003, 79 workshops were held. In addition to addressing agricultural customers, the center offers courses that focus on schools, nonprofits, and industrial customers, as well as an array of courses with applicability to a wider audience.

After the first few years of operations, AGTAC found the agricultural sector to be the least responsive market of those to which it provided services. This has led to increasing targeting of programs to the commercial sector that tends to better utilize the course offerings.

AGTAC has tried to maximize its effectiveness in the agricultural sector by partnering with existing bureaus and agencies. There has been some tie in to the activities of the Cooperative Extension Service, for example. The instructor for the soil moisture measurement course was brought in through connections to the Cooperative Extension Service. The Cooperative Extension Service also helps promote the courses offered by AGTAC. While it is reported that this promotion is sometimes quite heavy, no data were available to allow for examination of the effect on attendance.

SCE also formed its own Agricultural Advisory Board to provide direction to AGTAC. This Board is comprised of growers, farm bureau representatives, educators, cooperative extension service representatives, as well as utilities and regulators.

The course instructor aims for attendance of 20 to 30 at each workshop. If attendance were to grow any further, it would adversely affect the teaching environment, reducing the instructor's ability to interact with the attendees. To date, attendance levels have been satisfactory in the aggregate; usually 20 to 30 attendees. However, only 15 of these were customers, and there is a desire to get more agribusinesses in the audience at each workshop.

In the instructor's view, the difficulties in recruiting the desired number of agribusiness customers to the workshop are the norm. The course instructor reports that water management is relatively low on any agribusiness's list of priorities until there is some external impetus. At present, there is an external impetus that should drive up interest in water-management practices. State agencies are imposing stricter regulations on water quality to address contaminants such as pesticides, salts, and nitrates in water as it leaves farmlands. To meet the new state requirements, growers must demonstrate good water-management practices. Failure to do so will result in an inability to obtain state permits. One element that is considered in the assessment of water-management practices is the

frequency of watering and the quantity of water used. The use of soil moisture sensors is considered good practice.

Concern was expressed that the opportunities for partnering with other organizations may be limited by a view that AGTAC is in competition with their activities. In the view of the instructor, AGTAC was the most interested of any local organizations in sponsoring a workshop on energy efficiency or water-management practices at the time that this course was established.

Staff at the center has tried to find ways to better reach the agricultural community with their courses. One recognized barrier, identified through customer feedback, was the length of the workshops. Anecdotal information suggested that the 3-hour minimum for courses is not well accepted in this market segment. This course duration appears to be better tolerated by other business types within the commercial sector. It is felt that a 1-hour course would be much more effective in drawing participants from the growers market.

Another consideration is that agricultural businesses may be somewhat conditioned to having people come to them to share information on new technologies. They are visited by a number of representatives making sales calls for everything from feed to fertilizer to pumps. Agribusiness may rely on these reps as key information sources and, essentially, consultants to their operations. Concern was expressed that if these agribusinesses feel that adequate information is readily available to them, then this would create a barrier to their attending workshops at the center.

According to the workshop manager, program tracking data show that nearly all attendees are located within a 1-hour drive of the center. The center is not getting attendance from customers located one to two hours away, a finding that is not altogether surprising, but which means that the center is not effectively reaching the entire agricultural market that it was intended to influence. At the time of this evaluation, a mobile technology trailer was under development to take information out to locations more convenient to customers not in close proximity to the center. Program administrators had some questions about the ability to deliver information as effectively for this irrigation course, given that the trailer could not provide the variety of turf and crop fields for demonstration purposes available at the center.

5.4.2 Marketing

Marketing for all the 2003 AGTAC workshops was primarily accomplished by means of a quarterly announcement of scheduled workshops. This brochure was supplemented by monthly e-mail announcements and on-line information on the SCE website as well as the Energy Centers' website and outdoor advertising in the form of a freeway sign.

The quarterly announcement contains a complete listing of courses being offered by AGTAC during the specified timeframe. This announcement was distributed by mail to a 9000-name list. The program manager indicated that selected courses are promoted separately from this general quarterly announcement; these, for the most part, are

specialty classes. It was acknowledged that there might be value in trying a targeted mailing to bring out targeted customers for the moisture-sensing workshop; however, this prospect is stymied by the difficulty of identifying agricultural customers in the mailing list. There is no simple set of keywords to use in sorting the list as many of these enterprises now appear under the name of the owner.

AGTAC also maintains an e-mail list compiled with information from past course attendees. This list probably is growing over time; at the time we interviewed staff, there were approximately 400 addresses reported in this list. Using the contact information from past participants, AGTAC sends out monthly e-mail notices of upcoming courses.

A review of the content of the brochure material used to promote the 2003 workshop indicates that the promotional materials did not speak to the key benefits that a customer might hope to realize by workshop attendance. The course description mentions the various types of information to be covered in the course but does not tie this content back to the reader's business operations in terms of benefits, like reducing cost or improving crop growth. This is not a universal issue for AGTAC marketing. For example, the course listing immediately above this one includes such language as "Which is the best to use? Which costs the least? Which saves the most?" These types of hooks can generate interest in a course by drawing a clear linkage between content and benefits to the attendee.

Because of the dynamic nature of website content, it was not possible to undertake a review of the web-based support as it was offered in the program year 2003. Instead, the commentary provided here reflects the status of the website for AGTAC as it existed at the time this report was being prepared.

The SCE AGTAC website is user-friendly and easy to navigate. Course offerings are easily located; course descriptions, pricing, and schedule information are all provided. The on-line registration section is easy to understand and provides the essentials for allowing customers to immediately register for any courses of interest using a secure Internet connection. For those not comfortable with registration on line, telephone numbers are provided as well.

At the time we were reviewing the website, this course was not listed, so we were unable to ascertain whether the promotional language has improved since 2003.

As noted above, the AGTAC section of SCE's website is effective and serviceable, once the user is in that section of the SCE website. For agricultural customers, it seems likely that the AGTAC section is readily found, using the on-screen link in the section identified as being for agricultural customers. Other customers are unlikely to find a link to the AGTAC section by means of navigating through the site and browsing its content. At present then, the site looks effective for delivering information to agricultural customers but perhaps not to other markets served by this center.

5.4.3 Tracking of Participant Satisfaction

During PY2003, AGTAC captured customer satisfaction information from workshop participants by means of paper questionnaires distributed at the conclusion of the workshop. A summary report is issued within a week of the workshop, enabling management to ascertain overall success of the workshop.

Feedback from 2003 attendees was very positive. Using a 5-point scale, with ratings of poor, below average, average, above average, and excellent, respondents registered a strong level of satisfaction with the course instructor, seminar content, the facility, and the overall program. Table 5.1 summarizes these data.

Table 5.1: Same-week Assessments of the 2003 Workshop

	Ratings of Workshop Elements (n=12)				
	Excellent	Above Average	Average	Below Ave.	Poor
Overall quality of program	10	1	1	0	0
Presenters' knowledge of subject	11	1	0	0	0
Presenter's teaching effectiveness	10	1	0	0	0
Useful information received	11	0	1	0	0
Usefulness of materials	8	2	0	1	0
Classroom	10	2	0	0	0
Overall rating of AGTAC	10	1	0	0	0

5.5 Findings from Interviews with Other Agencies

Telephone interviews were conducted with executive directors of two county farm bureaus and one conservation district office. These calls were used to gather feedback and to seek out opportunities for possible cooperative activities. Specific topics that the interviews covered included:

- The relative importance of irrigation and energy concerns to their membership
- Views on how to reach customers having irrigation systems
- Recommendations on how to attract customers to workshops
- Recommended partner organizations
- Additional recommendations to AGTAC.

Findings from these interviews are described below.

5.5.1 Topic Relevance

Irrigation is viewed to be a topic that would attract interest from growers; surprise was expressed that this workshop would experience any difficulty in attracting this group of customers. It was recommended that course marketing should highlight that the course

addresses ways to reduce water use and identifies cost savings opportunities. A possible additional point to promote is that the techniques might have a second benefit of increasing crop yields. In the words of one respondent, "If you can show the impacts on the bottom line, you can get attendance."

5.5.2 Barriers to Attendance

Scheduling is perceived to be a important consideration and potential obstacle to attendance. "Timing is everything" when it comes to scheduling workshops for agricultural customers. Midwinter was felt to be best, and late summer through early autumn was characterized as impossible.

5.5.3 Partnership Opportunities

AGTAC is perceived to have done well in positioning itself with other organizations and is teamed up with "the right partners." No concerns were expressed that AGTAC had failed to develop appropriate partnerships, and AGTAC's operations seemed to be viewed quite favorably. Partnership opportunities seem to be available to be taken advantage of, as multiple contacts were quick to volunteer to assist in promoting AGTAC workshops. This favorable disposition toward AGTAC seems common among leaders at the county farm bureaus; interest from the water bureaus and agencies did not seem to be as uniform.[12]

There are a number of key opportunities to partner with regional agencies in promoting this workshop and others. The most prevalent is the opportunity to leverage the outreach capacity of friendly organizations by placing information in their monthly newsletters. Organizations that expressed willingness to publish information on AGTAC workshops in their newsletters include:

- Kings River Conservation District (readership of approximately 9,000)
- Kings County Farm Bureau (readership of approximately 1,000)
- Tulare County Farm Bureau (readership of approximately 3,500 of 5,000 farms in the county).

A few different options were considered: respondents offered to do a general piece on AGTAC's workshops, carry a workshop-specific piece, or to place a sidebar in the newsletter that highlighted the AGTAC website, allowing readers to seek out additional information on their own. The lead time needed by these Bureaus was relatively short; a month's advance notice seemed sufficient, based upon the information we collected.

In addition to a willingness to promote workshops in their newsletters, these organizations expressed some willingness to provide links between websites, particularly if a reciprocal arrangement can be negotiated.

[12] Based upon the unwillingness to even respond to our research request.

5.5.4 Other Recommendations

The Farm Equipment Show is felt to be a very good venue for staging workshops or distributing information about AGTAC's services. Reasons why this show is well regarded include the fact that it gets high traffic so that it can reach a wide audience, and the fact that it has display booths as well as workshops, thus offering an array of means for getting out information to the agricultural community. Feedback on using this show as a venue for AGTAC outreach was positive.

Other recommendations from these interviews centered on suggestions for other workshop topics. Two areas of interest are cold storage technology and converting from diesel to electric engines.

5.6 Participant Interview Findings

The findings from the participant interviews corroborated the information from the attendee questionnaires filled out at the time of the workshop with respect to the high opinions of the workshops. AGTAC courses are well regarded by participants from the 2003 moisture-sensing workshop. Quality course offerings generate interest in the overall AGTAC workshop program and spurs customers to monitor what is offered.

5.6.1 Reasons for Attendance

Reasons given for attending this particular workshop include both general information seeking and information seeking related to a planned purchase. Verbatim comments included the following:

- "Being a grower, I wanted to be aware of the strengths and weaknesses of different options, so I could do a better job managing irrigation applications."
- "I wanted to be aware of other resources; get a better understanding."
- "I was making a decision at the time. I was looking at the technology already."

5.6.2 Strengths of this Workshop

Course attendees liked both the instructor and the teaching methods used in the Soil Moisture Sensing Workshop. One element of the workshop that was valued was the means by which the different types of devices were reviewed, in particular, the method used to explain the advantages and disadvantages of the technologies.

No recommendations for improvements were offered by any of the attendees interviewed, an indicator of a high degree of satisfaction with the course as it is delivered.

5.6.3 Course Marketing

Recommendations for marketing this workshop were varied. Because of the lack of consensus on this topic, the responses are listed individually, below. One respondent recommended placing information in the publications of the County Farm Bureaus. Each County Bureau has its own publication. The California Ag Expo was mentioned by one respondent as a good venue to have an exhibitors' booth and to hand out information. Another's reaction to trying to deliver workshops at farm shows was that it depended

when the farm show was held and that at certain times of the year it's just not feasible to attend, regardless of what the venue is. The reaction from another respondent was that AGTAC already had a good location and didn't need to try to offer its courses at other venues.

Fax and e-mail notification were favored by a couple respondents. However, one respondent indicated that while e-mail is a fine means to advertise, he does not give out his e-mail address.

It was also mentioned that the brochure makes it easy to miss notice of individual workshops "it is very easy to overlook one course in the multitude in the list." However, it works as a marketing tool for other segments of the population. Another respondent liked the brochure and scans it closely to identify workshops that might be of interest.

5.7 Survey Findings

5.7.1 Overview of Respondents

To allow for an examination of new market opportunities, a majority of the respondents were members of new target markets for this workshop, including golf courses and country clubs, colleges and universities, and public gardens. In order to compare interest in the workshop among these new markets and contrast it to the existing target market of agricultural customers, the sample also included several respondents from agricultural businesses. Overall, 22% of respondents represented nurseries or garden centers, 18% were food agricultural enterprises, 16% worked at educational institutions, 42% were managers at golf courses or country clubs, and the remaining 2% represented public gardens.

Irrigated acreage at respondents' facilities ranged from five to 3,800 acres. A total of 34% of respondents had 20 acres or less; 68% had 100 acres or less.

5.7.2 Sensitivity to Irrigation Issues

A variety of considerations concern customers about their irrigation operations. Overall, the top concern is cost, leading other considerations by a 2-to-1 margin, (see Table 5.2). Other key concerns are controlling runoff and equipment maintenance. A number of respondents have multiple irrigation issues that are of concern.

Table 5.2: Key Irrigation Concerns

[multiple responses accepted]

Irrigation Concern	Number of Respondents Mentioning (percentage of column sample)			
	Agriculture (n=18)	Golf courses (n=19)	Institutions (n=8)	Total (%) (n=45)
Water costs	6 (33.3%)	10 (52.6%)	1 (12.5%)	17 (37.8%)
Controlling runoff	4 (22.2%)	3 (15.8%)	0 (0%)	7 (15.5%)
Maintaining equipment	4 (22.2%)	3 (15.8%)	1 (12.5%)	8 (17.7%)
Optimizing the amount of water used	4 (22.2%)	0 (0%)	2 (25.0%)	6 (13.3%)
Getting information about irrigation technologies	2 (11.1%)	1(5.2%)	1 (12.5%)	4 (8.9%)
Paying for new equipment	2 (11.1%)	0 (0%)	0 (0%)	2 (4.4%)
Compliance with state requirements	1 (5.5%)	0 (0%)	0 (0%)	1 (2.1%)
Other	2 (11.1%)	6 (31.6%)	2 (25.0%)	10 (22.2%)
No challenges	5 (27.7%)	1 (5.2%)	1 (12.5%)	7 (15.5%)

5.7.3 Awareness of and Participation in Utility Workshops

- **Awareness of AGTAC workshops was moderate**. Overall, Table 5.3 shows that 38% of respondents were aware of these services.

- **The workshops were well subscribed among aware customers.** Approximately one-quarter (4 out of 17) aware customers reported attendance at one or more workshops.

Table 5.3: Awareness and Participation in Workshops

Awareness of AGTAC classes and workshops	Percent of Aware Respondents by Customer Type (percentage of column sample)			
	Agriculture (n=18)	Golf courses (n=19)	Institutions (n=8)	Total (n=45)
Aware and have attended workshops	2 (11.1%)	1 (5.3%)	1 (12.5%)	4 (8.9%)
Aware but have not attended	5 (27.7%)	7 (36.8%)	1 (12.5%)	13 (28.9%)
Unaware	11 (61.1%)	11 (57.9%)	6 (75.0%)	28 (62.2%)

5.7.4 Level of Interest in Workshops

- **Customer interest in irrigation workshops is strongest when the workshop is viewed as providing information on ways to save on their irrigation costs or providing information on up-to-date technologies.** Respondents were asked to rate their level of interest in four workshop descriptions on a scale of 1 to 5 where 1 is "not interested at all" and 5 is "very interested." The course descriptions varied with respect to levels of emphasis on costs, compliance with state requirements, technology advances and environmental issues. As shown in Table 5.4, cost control current technologies are the most appealing topics for the markets overall.

- **Topic preferences differed across market segments.** Golf course managers were most interested in the cost control topic, while facility managers at educational institutions were most interested in learning about current technologies that are available.

Table 5.4: Interest in Irrigation Workshops by Topic

Workshop Description	Number of Respondents "Very Interested" (percentage of column sample)			
	Agriculture (n=18)	Golf courses (n=19)	Institutions (n=8)	Total (n=45)
A workshop which discusses ways to control your irrigation or energy costs	8 (44.4%)	8 (42.1%)	3 (37.5%)	19 (42.2%)
A workshop which discusses methods of compliance with state water management requirements	7 (38.9%)	5 (26.3%)	3 (37.5%)	15 (33.3%)
A workshop which discusses the most up-to-date irrigation technologies, including soil moisture sensors	7 (38.9%)	6 (31.6%)	5 (62.5%)	18 (40.0%)
A workshop which addresses runoff and groundwater contamination issues	6 (33.3%)	4 (21.1%)	1 (12.5%)	11 (24.4%)

5.7.5 Key Considerations

Respondents were asked which factors have the greatest impact on their likelihood of attending a new workshop of interest. Among the factors tested were cost, travel distance, scheduling, length of the workshop, and relevance of the information. As summarized in

Table 5.5, travel distance is an important decision factor to two-thirds of the customers in the target groups for the Soil Moisture Sensing workshop.

Table 5.5: Considerations Affecting Attendance Decisions

[multiple responses accepted]

Decision Factors	Number of Respondents (n=45)	Percent of Respondents
How far away it is	28	62.2%
Relevance of the information	18	40.0%
Workshop cost	18	40.0%
How long it is	17	37.7%
When it is held	11	24.4%
Other	1	2.2%

- **The most influential criterion affecting likelihood of workshop attendance is distance to the site of the workshop**.

- **Relevance of course information is of concern to golf course managers.** Several golf course managers made a point of emphasizing that course content would have to be relevant to their operations. This reaction may reflect a concern that AGTAC is geared toward serving agricultural customers primarily (although this research did not attempt to delve into this topic).

5.7.6 Distance and Scheduling Issues

- **AGTAC's location in Tulare was considered to be too distant by 60% of the respondents interviewed.** Given the importance ascribed to driving distance, this is a critical barrier (see above). This barrier was strongest for managers of golf courses (67% felt the location to be too remote).

- **Customers are receptive to the concept of a mobile workshop.** A large majority (84%) indicated that if a traveling workshop were developed which would come to a facility within 10 miles of their location, this would increase their likelihood of attendance. This response was strongest for the golf course managers (94%).

- **Morning meetings midweek are preferred.** Best times are Wednesday mornings (52%), Tuesday mornings (42%), and Thursday mornings (38%), or lunch meetings on Wednesdays (33%).

- **Tolerances on workshop duration vary, with agribusinesses being most sensitive to this attribute.** While many respondents felt workshops of one or two

hours (or less) were appropriate, another large percentage was quite willing to attend a half-day workshop (42% vs. 35%, respectively). The data indicate a heterogeneity in the market in terms of sensitivity to time requirements. Food agriculture and ornamental agriculture customers were less likely to willingly go to a workshop of over two hours (65% preferring the shorter workshop options), and institutional facility managers were most likely to accept a full-day workshop (38%).

- **Willingness to attend a workshop exhibits marked seasonality.** This finding is quite pronounced. Winter is clearly favored (69% consider it a good time of the year) while spring is least acceptable (22%). Summer and autumn were intermediate in acceptance (42% apiece).

Table 5.6: Seasonal Variations in Ability to Attend Workshops

Season	Percent Mentioning as Possible Time to Schedule							
	Agriculture (n=18)		Golf courses (n=19)		Institutions (n=8)		Total (%) (n=45)	
	Good	Bad	Good	Bad	Good	Bad	Good	Bad
Spring	11%	61%	32%	53%	38%	25%	24%	46.7%
Summer	67%	17%	37%	53%	12%	50%	44%	33%
Autumn	44%	39%	47%	16%	38%	12%	44%	33%
Winter	78%	6%	63%	21%	75%	0%	71%	11%

- **Scheduling workshops during relevant conventions or trade shows could improve attendance.** Over half of the respondents (60%) indicated that this step would increase their likelihood of attendance. This effect was strongest within the golf industry, where two-thirds indicated this arrangement would increase their likelihood of workshop attendance. Among the golf industry, key trade shows are those of the Golf Course Superintendents Association (at the local, state and national levels) and the PGA Tradeshows.

5.7.7 Information Delivery

- **Trade journals and SCE are primary sources of information on energy efficiency and new technologies.** Trade publications are used by 29% of customers, and SCE is a key information source for 20%. With the exception of consultants, which are used by 13% of the market, all other sources of information tested were used by under 10% of the customers. The publications of most impact are those issued by the organizations discussed in the bullets below (or their national counterparts). Many more publications are referenced by these customers but, particularly for the agribusinesses and nurserymen, these publications reach very select niches in the marketplace.[13]

[13] Publications of note include: *California Fairways,* newsletters/journals of the county farm bureaus, publications of the regional commerce associations, publications from the cooperative extension service,

- **Most customers belong to one or more trade-specific organizations and use these organizations as information sources.** Food agriculture and ornamental agriculture customers were most likely to belong to a trade group (72%), but all segments showed a pattern of association membership.

- **The County Farm Bureaus are key organizations to partner with for outreach to agricultural customers.** Aside from association with the farm Bureau, there are numerous niche-specific trade groups, relating to the particular crops raised. The fragmented nature of the growers markets in this respect suggests that working with an umbrella group like the County Farm Bureau may be most effective as a prospective partner for AGTAC.

- **The nursery segment seems fragmented with respect to trade group affiliations.** Our research did not uncover any single dominant association that has effective reach into the nursery market segment.

- **Similarly, no single trade association seems dominant in the field of educational facilities management.** The trade associations mentioned by this market segment were: California Landscape Contractors Association, International Association of Arboriculture, and Sports Turf Management Association.

- **The Southern California Golf Course Supervisors Association is a key trade group to work with in outreach to managers of golf courses and country clubs.** No other trade group has the reach and respect of as many golf course managers. The national GCSAA is also mentioned with great frequency. Following these in importance there are the National Golf Foundation, the PGA, and an assortment of lesser used organizations.

- **Irrigation associations are also used as a source of information.** Reliance upon irrigation associations and water authorities is less overall and within any given market segment, however, the reach of these groups is broader, extending across all the market segment groups examined in this study.

- **Two-thirds of the market seems receptive to alternative modes of education, but one-third prefers workshops to other avenues.** Of the alternatives tested, CDs or DVDs was most popular, followed by on-line tutorials. (See Table 5.7.) This pattern seems to suggest there are two major segments to be addressed by educational and informational efforts. One segment is fairly autonomous and at ease with electronic data media; the other values the hands-on and face-to-face instruction offered by seminars and workshops.

Grounds Maintenance, the journal of the Golf Course Supervisors Association, publications of the National Golf Association, *Nursery Magazine,* publications of the Nurserymens' Association, the journal of Turf Care Professionals, and *Turf Magazine*

Table 5.7: Preferences Regarding Information Distribution

[multiple responses accepted]

Information distribution option	Number of Respondents Mentioning (percentage of column sample)			
	Agriculture (n=18)	Golf courses (n=19)	Institutions (n=8)	Total (n=45)
DVD, CD, computer disk	8 (44.4%)	5 (26.4%)	2 (25.0%)	15 (33.3%)
On-line tutorial	4 (22.2%)	4 (21.1%)	2 (25.0%)	10 (22.2)%
Internet, general	4 (22.2%)	2 (10.5%)	0 (0%)	6 (13.3%)
Videotape	2 (11.1%)	2 (10.5%)	1 (12.5%)	5 (11.1%)
Manual or brochure	3 (16.7%)	1 (5.3%)	1 (12.5%)	5 (11.1%)
None of the above	4 (22.2%)	9 (47.4%)	2 (25.0%)	15 (33.3%)
Other	1 (5.5%)	0 (0%)	0 (0%)	1 (2.2%)

- **Mail is deemed the best method for letting these people and others in their positions know about upcoming seminars**. More than half of the respondents thought it to be the most effective means. Another one-fourth (12 of 45) preferred e-mail. Other methods, utility bills, websites, trade magazines, and professional organizations, were mentioned by only a few of the respondents.

5.8 Recommendations

Based upon the findings from all elements of this evaluation, the following recommendations are offered for the Soil Moisture Measurement Workshop.

5.8.1 Marketing

- **Work to boost awareness of course offerings overall.** Because the research findings indicated a fairly high participation rate in AGTAC courses among customers who are aware of their availability, a general awareness-building campaign should yield increases in enrollment overall. To accomplish broader awareness levels, AGTAC should supplement the course brochure with additional marketing efforts that do not rely upon direct mail.

- **Partner with leading trade groups to increase the reach of course-specific marketing efforts.** This should be a key focus future marketing efforts for the moisture-sensing workshop. The use of promotions in trade association publications or announcements could be particularly helpful for outreach to golf course managers and to agricultural customers. In the former case, there is only a single trade group of widespread importance. If AGTAC could persuade the Southern California Golf Course Supervisors Association to assist in its promotional efforts, this would effectively put course information before most members of this market segment. In the case of the agricultural customers, there

are more trade groups of importance, but the County Farm Bureaus are some of the most important. *Significantly, we found willing partners in the Farm Bureaus and we urge AGTAC to quickly follow up to establish the cooperative relationships that will allow for joint efforts in the future.*

- **Rewrite promotional materials for this course.** In conjunction with the recommendation to partner with key trade groups, this should be a priority for future marketing of the Moisture Sensing Workshop. Marketing materials need to draw a more direct linkage to key concerns and benefits to participants, something that the promotional material used in 2003 did not do. The course description is neutral, and does not mention the importance of course techniques to prospective participants. Cost savings is a key consideration that needs to be highlighted. The materials could also explicitly state that the irrigation techniques taught are consistent with the practices required in the updated state certification requirements.

- **Expansion of the e-mail effort.** The key drawback to the current e-mail list is its reliance upon addresses gathered from past program participants. In order to increase marketing effectiveness of this approach, AGTAC must begin to compile e-mail addresses of nonparticipants as well. One approach would be to compile a better list in-house by acquiring relevant lists from other sources. If it is not feasible to obtain such lists (for example, member lists from agricultural organizations in the area) SCE could take steps to collect e-mail addresses proactively from new service customers, attendees at farm shows, visitors to the AGTAC page of the SCE website, etc. However, this type of approach may not be cost-effective on its own. We recommend that if lists cannot be acquired from the Farm Bureaus and other organizations, that AGTAC request that announcements be placed in their e-mail communications with their members, with an electronic link to course or registration information or that links be placed on their websites.

5.8.2 Workshop Delivery

- **Schedule irrigation workshops in January and February.** Because seasonal activity schedules vary by crop and by business specialty, the timing of the spring upsurge in activity probably varies from one market segment to another. To be prudent, scheduling of irrigation workshops should probably avoid the shoulder period between late winter and early spring as well, as spring is the worst time to offer courses to customers with irrigation operations.

- **Offer both full 3-hour workshops as well as shorter, less intense informational sessions.** Agricultural enterprises are most sensitive to this issue, so any new short course offerings should be directed to this segment first.

- **Bring some courses closer to the customers.** Efforts to bring the courses to the customers should include the golf course managers segment. This might be best accomplished by partnering with the SCGCSA. Given the singular importance of

this trade group, such a partnership is likely to be effective in raising the course profile among golf course managers.

- **Test the effectiveness of alternative educational approaches.** The findings from this research suggest that an audiovisual format such as DVDs or videotapes could be popular with certain market segments. The data indicate, however, that this would be a worthwhile direction to pursue in addition to, not in the place of, the workshop. There seem to be some customers who prefer the hands on, interpersonal approach of a workshop as well as some who prefer the less interactive AV mode. Pursuing only one educational approach or another could improve outreach to a particular market segment but not overall reach into the customer market. Both workshops and AV approaches appeal to approximately one-third of the market.

- **Continue to seek out high-caliber instructors.** Satisfaction with past course experiences and expectations of high-quality course offerings are motivators for customers to closely examine the detailed brochures used in marketing these courses and to enroll in new courses.

5.8.3 Transferability

One of the research objectives for this case study was to examine how this course might be transferable to other service areas or locations. The following key observations should be considered when consideration is given to offering a similar workshop elsewhere:

- **Having an outdoor demonstration area or other means by which to demonstrate the technologies in a hands-on manner is important to this workshop.** Among the customers most inclined to attend workshops, a favorite benefit is the hands-on experience and learning opportunity. If an outdoor demonstration area is not feasible, the course design should include teaching elements that will have similar impact with attendees. Attendees value the opportunity to see the technologies first hand.

- **An effective course instructor can carry the course.** We found that favorable experiences with good instructors were strong motivators to use of workshops. If site constraints prevent the optimal demonstration-type setting for this workshop, program managers should give special attention to the effectiveness of the instructor.

- **Proximity of location is important to customers.** To the extent that location is not fixed, planning should look for sites within 10 miles of the target customer base.

- **Course content for nonagricultural customers may need to be differentiated somewhat from content for agricultural customers.** Courses targeted to managers of golf courses and country clubs should place an emphasis on material showing the cost effectiveness of the high efficiency irrigation

technologies. Courses directed at grounds managers of educational institutions may need to give more emphasis than other classes on a basic overview of current technologies, how they work, and how to add them to a site that has older systems and mature plantings.

As mentioned earlier, one of the benefits of the AGTAC center as a teaching site is the ability to go outside to view the irrigation technologies installed on site. This course element is valued by attendees and the site itself is mentioned by attendees as a plus. This feature of the AGTAC course may be challenging to replicate elsewhere, and it is likely that alternative approaches will be needed. The concept of a traveling version of this course – one that could be brought to a location near to the customer's business – was well received and may be piloted soon by SCE. If so, it will be worthwhile to monitor feedback from participants regarding satisfaction with the course content and presentation to determine how effective the instruction is without the benefit of the specialized setting.

6 Southern California Edison Company Customer Technology Application Center: Hard-to-Reach Customers

6.1 Introduction

6.1.1 Background

Southern California Edison (SCE or Edison) offered a variety of half-day, full-day, and two-day workshops on energy-efficiency topics at its Customer Technology Application Center (CTAC) in Irwindale, California, as well as at satellite locations elsewhere within its service territory. Although CTAC courses are generally well attended by business owners who do not meet the hard-to-reach (HTR) criteria, attendance from the HTR population was lower. CTAC wants to increase attendance by the HTR population at its workshops, and expressed particular concern with those offered in the Coachella Valley region.

CTAC provided the evaluation team with the following criteria for defining HTR businesses:[14]

- Customer on GS-1 rate schedule[15]
- An owner's first language is not English
- Is located in a rural area (as defined by ZIP code).

In this case study we compare two areas – the Coachella Valley and the Temecula/Lake Elsinore region – with respect to reaching the HTR business population. Edison offers local workshops to small businesses in each of these areas using similar marketing approaches. Both areas have a high proportion of businesses with 10 or fewer employees. In 2003 CTAC offered two courses in the Coachella Valley – Basic HVAC (four attendees) and Energy Efficiency for Nonprofits (two attendees). CTAC reported that participation in the Temecula/Lake Elsinore region tends to be higher but did not indicate that any courses were offered in that area in 2003.

Edison employees presented several hypotheses to explain the lower attendance in the Coachella Valley:

- **Business types and course offerings.** There is a substantial seasonal population, and tourism is a great source of income; because these characteristics are unique to the Coachella Valley (as compared to other parts of Edison's service territory),

[14] CTAC did not include the "split-incentive/lease" criterion for HTR, which is part of the CPUC definition.
[15] Southern California Edison's Schedule GS-1 is designed primarily for small and medium sized commercial customers with demands of 20 kilowatts or less. If the monthly registered demand exceeds 20 kilowatts (kW) three times in any 12-month period, GS-1 is no longer applicable. Typical GS-1 customers include small and medium-sized retail businesses, churches, service stations, schools, and restaurants.

it is possible that the chosen workshops are not relevant to the needs of business owners in Coachella Valley.

- **Language barrier.** Edison staff also reported that a large portion of the Coachella Valley population speaks English as a second language, which potentially represents a barrier to participation in the courses. Although Edison plans to offer in-language (Spanish) seminars during 2005, these courses have not yet been offered in the Coachella Valley.

6.1.2 Research Objectives

The main objective of this case study was to find ways in which Edison can increase participation in workshops offered in the Coachella Valley and identify any substantive difference between the HTR business customers in the Valley and the Temecula/Lake Elsinore area. To meet this main objective, research was conducted to achieve the following goals:

- Identify barriers to workshop participation among members of the HTR population in the Coachella Valley,
- Determine potential approaches to overcome these barriers, including appropriate marketing channels and messages,
- Reveal whether changes in course topics, descriptions, locations, and/or timing would better attract members of the HTR population in the Coachella Valley,
- Uncover alternative approaches to providing information to Coachella Valley business owners, and
- Clarify the perceptions of SCE and CTAC as sources of energy information.

In the course of conducting the case study we found few differences between the Coachella Valley and Temecula/Lake Elsinore area to explain low attendance in the Coachella Valley. Because of the similarities between the two areas and the consistency in responses across Coachella respondents, we expanded our inquiry to the Temecula/Lake Elsinore area to better learn about HTR business customers.

6.1.3 Section Layout

The remainder of this section describes the courses and how they were marketed, followed by brief characterizations of the Temecula/Lake Elsinore and Coachella Valley regions. Next, we describe the research methodology and findings from the in-depth interviews. The section concludes with recommendations as to how SCE can increase attendance in its training courses in these areas.

6.2 Workshop Marketing

6.2.1 Overview

During 2004, five workshops were offered in the Temecula/Lake Elsinore and/or Coachella Valley regions. These workshops include: Basic Lighting for Commercial and Industrial Facilities; Basic Heating, Ventilation and Air Conditioning (HVAC);

Evaporative Cooling for Commercial and Industrial Facilities; How to Manage your Business's Energy Costs; and Small Business Energy Survey Training. The first two of these were offered both in the Temecula/Lake Elsinore and Coachella Valley regions, while the latter three were offered only in the Coachella Valley. This section of the case study describes these workshops, their attendees, and the workshop marketing efforts.

6.2.2 Course Descriptions

The following descriptions appeared in marketing materials related to the workshops.

Basic Lighting for Commercial & Industrial Facilities

Explore ways to decrease energy consumption and costs in your commercial or industrial facility through the proper selection of incandescent, fluorescent, and high-intensity discharge lighting systems. Enhance your understanding of light source technologies and performance characteristics, as well as their appropriate applications. At the class held at CTAC, visual comparisons will be demonstrated in our newly upgraded Lighting Lab.

Basic Heating, Ventilation & Air Conditioning (HVAC)

Learn the basics of HVAC systems in homes, as well as in small-to-medium commercial and industrial facilities. Explore the inner workings of an energy efficient HVAC system, including air distribution, controls, and air quality.

Evaporative Cooling for Commercial & Industrial Facilities

Evaporative cooling using current technology and available equipment can be an energy-efficient, environmentally benign, and cost-effective means of cooling. Applications are found for comfort and cooling in commercial and industrial buildings, in addition to the traditional industrial applications for improvement of worker comfort in mills, foundries, power plants, and other hot operations. Major course topics: principles of cooling by evaporation, general application, direct evaporative air coolers, psychometrics of evaporative cooling, indirect evaporative cooling, outdoor air systems, industrial applications, economic considerations, maintenance and water treatment, and evaporative cooling equipment suppliers.

How to Manage Your Business's Energy Costs

As the owner, manager or operator of small- to medium-sized commercial properties, you're probably always looking for ways to increase the profitability and reduce the operating costs of the facilities you supervise. This free, half-day workshop will provide practical information on identifying lighting and HVAC issues, discuss ways to reduce energy costs, teach the main steps of an energy survey, explain your electric bill, provide rate options and a work plan to implement survey recommendations.

Small Business Energy Survey Training[16]

While targeted at organizations and individuals promoting energy-efficiency measures to small and medium-sized businesses and nonprofits, this two-day class is open to all. The training will help attendees understand, coordinate, and leverage various financial

[16] Note: This course is also called "Commercial Energy Efficiency Surveys."

incentive programs to support local energy-efficiency initiatives. Attendees will learn about financial incentive programs supporting energy-efficiency, program policies, energy audit programs, and energy audit techniques.

6.2.3 Marketing Efforts

CTAC markets its workshops through five channels:

1. Targeted mailings to specific business types regarding individual workshops (e.g., a mailing to manufacturing/industrial customers regarding a motors and variable-speed drives workshop),
2. Inclusion on the CTAC calendar that is distributed to individuals, other Energy Centers, and to organizations,
3. Listings on the CTAC website under offerings for the quarters during which the courses are offered,
4. Promotion by Edison's Public Affairs and Business Solutions staff, and
5. Advertising via e-mail to a distribution list that currently contains about 2,000 names of visitors to CTAC (facilities managers, architects and designers) who have expressed an interest in these types of workshops.

The targeted mailings specified in the first channel above are sent to a specific sector or businesses rather than all businesses, as the latter would be too costly for Edison to maintain on a continual basis. Course targets are based on Standard Industrial Classification (SIC) codes considered relevant to each workshop topic.

Edison identified seven Chambers of Commerce in the Coachella Valley, five within its service territory. CTAC includes the Palm Desert Chamber of Commerce (in the Coachella Valley) on its distribution list for the calendar of courses. The Palm Desert Chamber acts as Edison's main liaison, forwarding information to the four other Coachella Valley chambers to notify their members of training workshops and other events. The four chambers (in addition to the Palm Desert Chamber of Commerce) are located in Desert Hot Springs, Cathedral City, Palm Springs, and Rancho Mirage. We confirmed that Desert Hot Springs Chamber passes the information on to its members, but do not know if the other chambers do so.[17]

The Palm Desert Chamber of Commerce has approximately 1,400 member businesses, and approximately 25 percent of these belong to more than one Chamber of Commerce. CTAC holds its workshops at the Palm Desert Chamber's facility in Palm Desert. The Chamber includes fliers on CTAC-sponsored workshops monthly in a packet sent to members with its newsletter. This packet may include up to 20 fliers in a given month. Information on workshops is also sent to member businesses approximately one week before any Chamber event. The Chamber seeks co-sponsorship for the workshops from

[17] The sample frame for interviews did not include a census of the Chambers of Commerce in the Coachella Valley. We were unsuccessful in completing interviews with representatives from all Chambers of Commerce with whom we made initial attempts, and replaced them with other respondents (from other Chambers of Commerce or other types of organizations.)

the four other Chambers, allowing these Chambers to recruit attendees from their own membership pools in addition to Palm Desert's.

In the Temecula/Lake Elsinore region, CTAC relies on the Temecula Valley Chamber of Commerce to disseminate information to the other Chambers. CTAC workshops are held at the Temecula Valley Chamber's facility in Temecula. The Temecula Valley Chamber of Commerce has approximately 1,375 members. The Chamber contact indicated that she passes information about CTAC workshops on to the Murrieta Chamber and the Southwest California Economic Development Committee (EDC), although these two organizations also directly receive Edison's CTAC announcements via e-mail.[18] The Temecula Valley Chamber contact indicated that she receives "invitations and marketing pieces" from CTAC via e-mail and places them in the monthly Chamber newsletter (mailed to all members) as well as in their "e-Commerce" e-mail newsletter.

6.2.4 2004 Workshops in the Case Study Areas

As mentioned in section 6.2.1, two courses were offered in the Temecula/Lake Elsinore region during 2004, and five were offered in the Coachella Valley region. Edison has identified that attendance of workshops in the Temecula/Lake Elsinore region has been historically higher than in the Coachella Valley, but Table 6.1 indicates that for the two courses that were offered in both areas in 2004, attendance in the Coachella Valley was greater than or equal to attendance in the Temecula/Lake Elsinore Region.

Attendance at two out of three of the other courses offered in the Coachella Valley, however, was quite low: seven at the September workshop titled, "How to Manage your Business's Energy Costs," and only four at the workshop titled, "Small Business Energy Survey Training." The remaining course on Evaporative Cooling (offered in July only in the Coachella Valley) had the highest number of attendees of all courses in either of the two locations (15 attendees).

Table 6.1: 2004 Workshops in the Case Study Area

	# Attendees	
Topic	**Temecula**	**Coachella Valley**
C&I Lighting	12	12
Basic HVAC	10	12
Evaporative Cooling	NA	15
Managing Energy Costs	NA	7
Energy Survey Training	NA	4

Source: Christine Evans (CTAC), 2004. Personal Communication, 01/03/2005.
NA indicates course was not offered in this area

[18] The EDC is a combined effort of the Lake Elsinore, Murrieta, and Temecula communities that deals with a range of industry segments including technology.

6.3 Methodology

Research for the SCE-CTAC case study consisted of in-depth interviews with CTAC employees, interviews with representatives of organizations in the target areas, and secondary research on the demographic characteristics of the area. During January and February of 2005, we conducted 10 in-depth telephone interviews with representatives of Chambers of Commerce, other business membership groups, and economic development organizations. Interviews were heavily concentrated in the Coachella Valley region, as this was the region identified by Edison as having relatively low workshop attendance. We conducted interviews with representatives of seven organizations in the Coachella Valley and three in the Temecula/Lake Elsinore region. Two additional interviews were conducted with Edison staff, including the CTAC program manager and one of Edison's two public affairs contacts in the Coachella Valley.

In-depth interviews are a qualitative research method; they are useful for identifying and exploring the range of attitudes, opinions, and preferences on a particular topic or issue. The open-ended nature of these interviews allows a researcher to make unexpected connections or to discover alternative ways to think about a topic. However, because they represent only a small segment of the total population, in-depth interviews do not allow for estimates regarding the percentage of people who hold a certain opinion or attitude. The information presented in this report should thus be evaluated within the context of the qualitative nature of the research.

We conducted the in-depth interviews with representatives of business and economic development organizations in the Coachella Valley and Temecula/Lake Elsinore areas to address the following issues:

- Characteristics of local businesses, including size, type, languages spoken, and seasonality (if applicable),
- Impressions of business owners' interest in and attitudes toward energy efficiency,
- Awareness of CTAC and training courses offered through CTAC, as well as the respondents' sense of business owners' awareness,
- Information sources used by businesses as well as effective marketing messages and methods,
- Necessary components of workshops to provide value to participants as well as details on content and format (including the best time(s) of day, week, and year to offer training),
- Barriers to business owners' participation in workshops, and
- Perceptions of Edison and CTAC.

The sample frame was developed starting with a contact list provided by a CTAC representative via e-mail. We expanded upon this list through Internet research and

networking with contacts in the initial sample. Each interview required approximately one hour to complete.[19]

6.4 Findings

In this subsection we discuss the characteristics of the areas, followed by findings from the in-depth interviews with representatives from organizations in the Coachella Valley and Temecula regions. The organizations represented by the respondents were Chambers of Commerce, other business networks and economic development organizations. We incorporated into the discussion Edison employees' comments and perceptions where appropriate.

6.4.1 Regional Characteristics

The Temecula/Lake Elsinore and Coachella Valley regions of SCE's service territory are both located within Riverside County. Figure 6.1 shows a map of the western and central portions of the Riverside County and identifies the Coachella Valley (comprised of West Desert and East Desert) and the region encompassing the Temecula/Murrieta and Lake Elsinore areas, the latter of which is also called the Tri-Communities area. For the purposes of this study, Temecula/Lake Elsinore will encompass the Temecula/Murrieta and Tri-Communities area and Coachella Valley will include only the West Desert region of the Coachella Valley, as most of the East Desert is outside of SCE service territory.

Figure 6.1: Map of Western and Central Riverside County, California

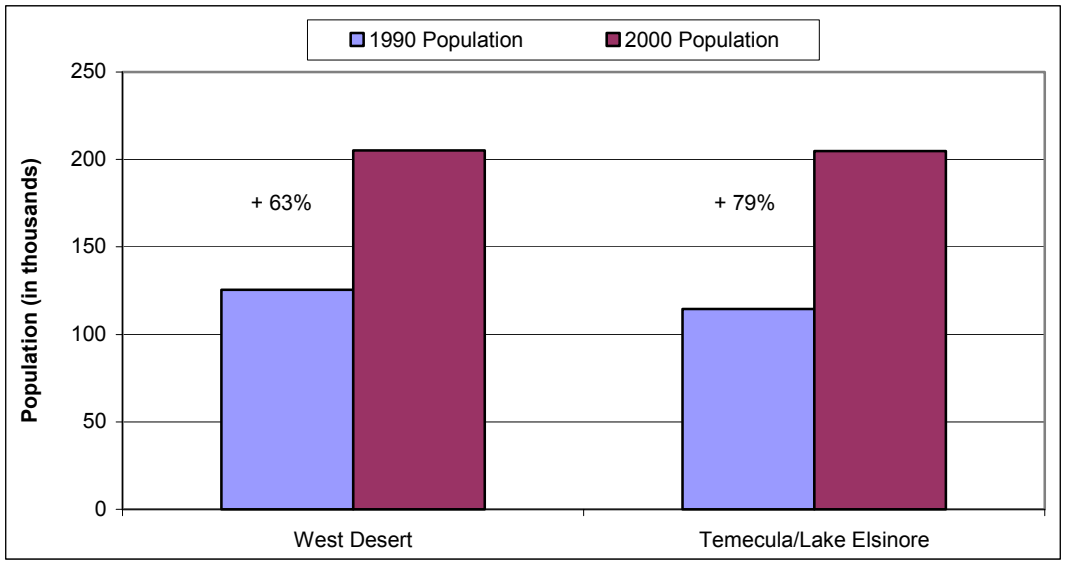
The West Desert portion of the Coachella Valley is generally regarded as a wealthy area (it includes Indian Wells, a city with one of the highest median incomes in the country).

[19] One respondent was unable to commit to the time required to complete the entire interview, so the interviewer used discretion in identifying key questions to maximize the benefits from this respondent.

In 2002, United Way of the Inland Valleys conducted a countywide needs assessment and produced profiles of Riverside County communities. According to the report, "lands [in the West Desert] are green from private golf courses, lush medians, gated communities, and exquisite shopping." While generally considered wealthy, the West Desert area also includes Desert Hot Springs, "one of the highest need areas in Riverside County." The 2002 United Way study reports that "the [West Desert] is also attracting a rising service industry employee population, causing pockets of lower socio-economic groups within the region." (The East Desert portion of Coachella Valley is agricultural based and has significantly different business and demographic characteristics.)

Both the Coachella Valley and Temecula/Lake Elsinore region are experiencing rapid population growth, 63% and 79% respectively (see Figure 6.2). These two regions' populations are increasing more rapidly than the countywide average of 32 percent between 1990 and 2000 and dramatically faster than the statewide average increase of less than 14 percent within the same timeframe. As with any rapidly developing community, infrastructure, communications networks, and community services are not expanding at a pace adequate to meet the community's needs.

Figure 6.2: Population Growth, 1990-2000



Source: United Way of the Inland Valleys, 2002.
West Desert: 1990 N=125,570; 2000 N=205,214.
Temecula/Lake Elsinore: 1990 N= 114,507; 2000 N = 204,858.

The income and race/ethnicity of the two areas are similar (see Table 6.2). In 2002, the average Adjusted Gross Income (AGI) in the West Desert was $59,281.[20] compared to $53,300 in the Temecula/Lake Elsinore region. Both areas are predominantly white, with

[20] Melissa Data Corp, 2002. "Free Lookups: Income Tax Lookups by Zip Code." Rancho Santa Margarita, CA. Online at http://www.melissadata.com/Lookups/TaxZip.asp. Figures based on same zip code definitions of areas as defined in United Way of the Inland Valleys, 2002.

sizable Hispanic populations. The West Desert region has a greater percentage of Hispanics, with almost one-third of the population of Hispanic origin.

Table 6.2: Race/Ethnicity in Two Riverside County Regions, 2000

Race/Ethnicity	West Desert Coachella Valley	Temecula/Lake Elsinore
White	63%	67%
Hispanic	29%	22%
Asian/Pacific Islander	3%	4%
African American	2%	3%
Other/Multi-Race	2%	3%
Native American	< 1%	1%
Population	**205,214**	**204,858**

[Percentages do not sum down columns to 100% due to rounding error]
Source: United Way of the Inland Valleys, 2002.

The age distribution in the two areas is substantially different, the West Desert of the Coachella Valley with a large percentage of senior citizens (retirees) and therefore a lower percentage of young people, especially under 18. The West Desert's high density of resorts, casinos, boutiques, and golf courses may be particularly attractive to wealthier, retirement-aged individuals than the other areas' offerings.

Table 6.3: Population by Age Group, 2000

Age Group	West Desert Coachella Valley	Temecula/Lake Elsinore
Under 18	22%	33%
18 to 24	31%	39%
45 to 64	23%	18%
65 or over	24%	10%
Population	**205,214**	**204,858**

Source: United Way of the Inland Valleys, 2002.

Table 6.4 shows that approximately four out of five businesses in the two study areas have fewer than 10 employees and thus may meet one of the HTR criteria. These businesses employ roughly one-third of the workers in these areas.

Table 6.4: Businesses by Business Size

	Percent of Businesses		Percent of Employment	
Business Size (Number of Employees)	**West Desert Coachella Valley**	**Temecula /Lake Elsinore**	**West Desert Coachella Valley**	**Temecula /Lake Elsinore**
<10 employees	80%	81%	31%	35%
10 to 99 employees	12%	11%	45%	46%
100 to 499 employees	1%	1%	18%	18%
500 or more employees	<1%	<1%	6%	1%
Unknown	8%	7%		
Number of Businesses	**11,834**	**8,995**		
Number of Employees			**78,693**	**54,903**

Source: Dun & Bradstreet, 2004. Marketplace DVD, Q1 2005. Short Hills, NJ.
Areas defined as in United Way of the Inland Valleys, 2002.

Table 6.5 provides a summary of the regional characteristics, comparing the West Desert area of the Coachella Valley to the Temecula, Lake Elsinore region. While the two areas differ in some ways, the differences are not so substantial as to warrant different approaches to offering CTAC courses.

Table 6.5: Summary of Regional Characteristics

Characteristic		**West Desert Coachella Valley**	**Temecula /Lake Elsinore**
Average Adjusted Gross Income (AGI)		$59,281	$53,300
Population Change, 1990 to 2000		+63%	+79%
Total Population:		64%	68%
	Percent Hispanic		22%
Total Population:	Under 18	22%	33%
	Over 65	24%	10%
Total Number of Businesses *		**11,834**	
Total Number of Employees *		**78,693**	**54,903**
Percent of Businesses with <10 Employees		80%	81%
Percent Employed by:	Businesses with <10 Employees	30%	34%
	Businesses with 500+ Employees	6%	1%

Note: Number of businesses and employment based on areas as defined in United Way of the Inland Valleys, 2002.

6.4.2 In-depth Interview Findings

Respondent Organizational Characteristics

We interviewed 10 respondents representing organizations serving the Coachella Valley (7) and Temecula (3) regions. Half the respondents represented Chambers of Commerce; one represented a business networking organization, and the remainders were public or private nonprofit entities involved in economic development. All respondents said their organizations serve or represent business owners in some way. Membership in the organizations ranged from 30 to 1,400 businesses. Most respondents' organizations had several hundred or more member businesses. The economic development organizations represented larger groups, typically including one or more communities in their entirety.

Business Characteristics

Type and Size. In both the Coachella Valley and Temecula/Lake Elsinore regions, respondents indicated that their areas are rapidly developing. In the Coachella Valley, businesses were more skewed toward the hospitality and recreation industries (including resorts, casinos, golf courses, restaurants, and boutiques) tailored to serving the thriving tourist industry. Although the Valley's largest employers are quite large (including the casinos and resorts with thousands of employees), respondents indicated that the majority of businesses in the Valley are smaller, and the presence of manufacturing industries is not significant.

The Temecula/Lake Elsinore region, businesses include a smaller number of casinos and some technology industry (including biotechnology and information technologies), representing the largest employers, large retail chain stores and so-called big-box stores, representing the mid-size businesses, and many smaller mom-and-pop–type establishments and home-based businesses. The trends reported by respondents echo the data on business demographics presented in Table 6.4.

Respondents in the Coachella Valley mentioned that the West Desert portion of the Valley has approximately 130 golf courses, many casinos and resorts (including a newly opened casino with a 21-story hotel). Several respondents remarked on the sheer size of the casino and resort facilities, including hotels with hundreds of rooms. One respondent remarked that a newer casino is reportedly home to a 30-lane bowling alley, and another resort stretches across 655 acres and includes a casino, hotels, golf course, condominiums, and a shopping district. Respondents indicated that "there is a huge workforce employed by the casinos and hotels," and underscored that these are "24/7 industries" that operate around the clock and employ thousands. "[The casinos] are all new," said one respondent, and each has "thousands and thousands of lights and signs as well as thousands and thousands of employees."

Along with the West Desert's casinos and hotels, there are a lot of what one respondent called "peripheral businesses" that operate to serve the resort visitors, such as "a ton of restaurants," retail shops, spas, and boutiques. One respondent mentioned that "there are not any big smokestack factories," but some technology industry is slowly moving in; this respondent emphasized that all new industry is "light industry." Another respondent

indicated that because the West Desert is developing so rapidly, the area also supports a burgeoning building trade, including many contractors and developers, as well as a sizeable number of real estate firms.

The three Temecula/Lake Elsinore respondents indicated that businesses in their area are primarily small. One respondent reported that approximately 60 percent of the members of the Lake Elsinore Chamber are home-based businesses, and an additional 20% have five employees or fewer. Only 5% have 100 or more employees, but "this dynamic is changing rapidly" as larger businesses are moving into the area. In Murrieta, approximately 85% of the membership base has 10 or fewer employees, while only a few members have upwards of 1,000 employees. In Temecula, approximately 80% of the Chamber's 1,375 members are businesses with one to five employees. The largest members of the Temecula Chamber include a casino with approximately 5,000 employees and a biotechnology firm with 1,900 employees.

Seasonality. Respondents in the Temecula/Lake Elsinore region indicated that seasonal businesses have historically comprised only a small percentage. In the Coachella Valley, however, respondents indicated that between one and two decades ago, most of the businesses serving the tourist industry would shut down during the hot summer months (the tourism off-season). This is no longer the case, as the Valley's year-round population is increasing dramatically. According to one respondent, "during January though April there's a lot more people [in the Valley], a lot more bodies on the streets and in the stores… a lot of people have a second home here and go someplace cooler in the summertime, but now there's a lot more people here year-round and most or all businesses are open [year-round]."

Other Coachella Valley respondents mentioned that, "elderly snowbirds leave in May and return in November" from as far away as "the Midwest and Canada." One respondent noted that, "A couple of decades ago everything used to shut down during the off-season, but there's only one restaurant I can think of now – only *one* now that [shuts down] in the off-season; absolutely nothing else closes in the off-season now." In the words of another, "There are no more ghost towns here during the hot months." Three respondents mentioned that the permanent population of the Coachella Valley will increase by 50 to 100 percent within the next 10 to 15 years.

According to respondents in the Temecula/Lake Elsinore region, businesses are generally open year-round and have been historically. One respondent mentioned, however, that the region supports many wineries, which are less active during the fall and winter months.

Language Needs. Respondents in both the Temecula/Lake Elsinore and Coachella Valley regions indicated that bilingual residents represent large portions of their populations; however, they underscored that most business owners who speak English as a second language are fairly fluent in English. This may be less true moving eastward across the County, but in general, respondents felt that business owners in their areas are fluent in English. Many respondents mentioned that Spanish is spoken across large stretches of their area, but business owners "speak English at work and Spanish at home."

Residents who are members of the workforce, rather than business owners, however, may be less fluent in English than in Spanish.

Other respondents emphasized the need for in-language (Spanish) seminars. An Edison representative has indicated there is at least one CTAC-sponsored workshop scheduled during 2005 that will be taught in Spanish and that broadening in-language course offerings is "absolutely essential." In the words of another respondent, "there is a great need for that, for Spanish courses; it would be a great benefit." Another respondent mentioned that the Hispanic community within the desert is very loyal to organizations that recognize their needs, and offering Spanish-language training workshops may be another way for Edison to establish itself as a member of the Coachella Valley community.

Although respondents indicated that most business owners in the West Desert and Temecula/Lake Elsinore region speak English, they also felt that workshops should be offered in Spanish and possibly other languages as well. One Coachella Valley respondent stressed that the Valley supports a "diverse community" with multiple languages, not just Spanish; respondents also mentioned the existence of smaller Chinese, Japanese, Filipino, and Hmong communities within the Valley.

Awareness of CTAC and Workshops

Five of the 10 respondents were aware of CTAC prior to their interview. Of those five, four respondents were aware that CTAC offered training workshops. Even those who were aware of the existence of workshops may still hold misconceptions, as exhibited by one Temecula/Lake Elsinore respondent who was unaware that CTAC offered free local workshops:

> "If Edison used a local facility for workshops on energy efficiency, people would probably attend. Right now, though, they're saying, 'not only do we charge you a lot of money, but we also want you to travel and spend money and fight traffic to attend' – no thanks! A half-day seminar would be an all-day affair. Bring it local and show that the utility really cares."

6.4.3 Interest

All three of the Temecula/Lake Elsinore respondents cited traffic, infrastructure, and workforce concerns as major issues for local businesses, with energy costs as a secondary concern. According to the 2002 United Way needs assessment, within the Temecula area, "Future growth outside their city limits have both communities [Temecula and Murrieta] concerned about increased traffic congestion, and additional strain on already overburdened health and social services."

Although energy concerns play somewhat of a lesser role than other concerns in the Temecula/Lake Elsinore region, they are still high on the list of businesses' concerns. "Lack of a skilled workforce is the major problem here because we have lots of light manufacturing and light industrial," said one respondent. "Energy costs are a concern, but a lesser concern than our workforce issues, our freeways, and our infrastructure."

Another respondent indicated that, "one of the major concerns here is traffic, because the number of cars is too great for the infrastructure to support."

In the Coachella Valley, however, "energy costs are a major concern." According to one respondent, "we have people that want to relocate [their businesses] and are looking specifically at commercial electricity rates that the desert's different providers offer." The same respondent indicated that some business types may be more concerned about electricity than others – "if you don't have machinery beyond lights and office equipment, it's not as big a concern, but for the smaller industrials coming in, [energy costs] are definitely important" – nonetheless, "*everyone* is concerned about energy costs and everyone wants to save energy."

Another respondent in the Coachella Valley indicated that the "major concerns are operating costs and energy costs," and added, "I'd think energy costs are up there on the list and they have been for several years." In fact, all but one respondent in the Coachella Valley indicated that energy costs are among desert business owners' most pressing concerns.

Respondents in the Valley also indicated that availability of a "qualified" or "well-trained" workforce is a major concern. In the words of one respondent, "restaurant manager positions are high-paying positions here, and they can't find qualified people to take the jobs." Another respondent mentioned that language issues are big when it comes to labor, and the ability to communicate with one's workforce is a concern.

When asked whether they thought businesses in their areas want to learn more about saving energy (and if so, in what areas), respondents indicated that, "business owners are absolutely interested." Most respondents indicated that all residents of the Valley are interested in saving energy, but business owners inside Edison's service territory may be more interested than business owners outside of the service area. In the Temecula/Lake Elsinore region, respondents indicated a similarly high interest among business owners in saving energy. All of these respondents indicated that business owners are interested because energy savings translate to money savings.

6.4.4 Information Sources

In both regions respondents indicate that businesses rely heavily on Chambers of Commerce and other business organizations for information. (Since many of the respondents represented Chambers of Commerce, they may overemphasize this relationship.) Coachella Valley respondents also mentioned other organizations where businesses get information and that might partner with Edison to promote workshops (Table 6.6.)

Several Coachella Valley respondents mentioned a regional newspaper, *The Desert Sun*, as a valuable source of information for business owners and mentioned that the newspaper covers a large area of the Valley. One respondent suggested taking advantage of the free advertising offered by many local papers, indicating that newspapers will generally include information about upcoming meetings of interest to community

members in the "Community Interest" section free of charge. Another respondent mentioned that *The Desert Sun* recently launched a daily newspaper called *Viva* to target Hispanic professionals in the business community, and another mentioned local television stations as useful sources of information.

Table 6.6: Information Sources: Coachella Valley Business Organizations

Organization Name
Chamber of Commerce
Coachella Valley Economic Partnership (CVEP)
Desert Business Network
Palm Springs Desert Resort Convention and Visitors Authority (CBA)
Southwest California Economic Development Committee

In the Temecula/Lake Elsinore region, respondents also indicated that business owners rely heavily on their local Chambers of Commerce. In addition, respondents mentioned several other venues for promoting workshops in the Temecula area. These are;

- Local newspapers (e.g., *The Californian* and *The Press Enterprise*)
- Temecula city website
- Local Rotary Clubs (which are reportedly quite active)
- The Temecula Valley Professional Women's Club.

6.4.5 Marketing

Methods for Reaching Target Population.

We discussed with all of the respondents issues related to marketing workshops to small businesses in their respective areas. All of the respondents (regardless of location) indicated that communicating with potential workshop attendees though business organizations and Chambers of Commerce is the best ways to disseminate information on CTAC workshops. Every respondent cited Chambers or other business groups and their publications as good sources of information.

One respondent noted "placing an ad isn't really going to connect with [desert business owners] – it's how you reach out." Two respondents mentioned involvement with annual or periodic community events as a great way to reach a broader audience: "[Edison] should get involved with events that have existing audience," said one respondent. Respondents suggested Palm Desert's Living Desert Zoo's annual Earth Day celebration (every April) as an event at which to reach business owners and also mentioned that community days and school science fairs as other possibilities. "At this time of the year the school districts do science fair projects – those are places where you've got a huge group of people, and these kids' parents are business people in the community – perfect!"

Effective Marketing Messages.

Without a single exception, all 10 respondents mentioned that *saving money* is the one sure draw for workshops in both of the study areas. In the Coachella Valley, several respondents stressed that the needs and interests of desert businesses are unique and specified that marketing messages have to be "extremely relevant" and convey a "sense of urgency, or almost a sense of emergency" to be effective.

Three Coachella Valley respondents mentioned the need for marketing materials to have somewhat of a confrontational message; for example, one respondent suggested stating, "Dollars you could be keeping are going to the utility! Do you really want that? If not, then come to this meeting." Another suggested, "Keep your money in your own pockets instead of the utility's; learn how at this class." The third respondent suggested, "You must really enjoy paying high energy bills! If not, you'd come to this seminar!"

When asked what the main message for workshop marketing materials should be, other desert respondents made the following statements:

- "It's really saving money by saving energy; that's hitting the nail on the head."
- "Energy and environment are very nice fluffy little things, but all [desert business owners] really care about is saving money."
- "The bottom line is really dollars; it's that simple."
- "Save money! That's the key."
- "Dollars and cents is really it – saving money."

One respondent stressed that marketing materials should emphasize how the time spent in a workshop translates into dollars saved – he suggested a message to the effect of "Take two hours and save 10 percent on your electric bill."

In the Temecula/Lake Elsinore region, respondents also stated that saving money is the key marketing message for workshops. In the words of one respondent, "The bottom line is telling them how [the workshop is] going to save them money." When asked what should be used as the "hook" to draw Temecula/Lake Elsinore businesses to these workshops, respondents again echoed that the workshops should "promise to show [the business owners] ways to save dollars." In the words of another, "tell [business owners] that this course will save them money, and then show them how."

Content and Format

Providing Value. When asked what factors would be necessary for a workshop to provide value to its attendees, many respondents stressed that useful takeaway materials are essential. In the words of one desert respondent, "give [attendees] something useful to take home with them." Respondents stressed the importance of providing useful information and tools for saving energy in attendees' businesses. One respondent suggested, "Show the rebate forms if there are rebates, show them the dollars and cents of it. Show them it's simple to fill out a form; make them want to learn how to do it."

Two of the Temecula/Lake Elsinore respondents also mentioned that providing workshop attendees with takeaway materials is vital: "people love to come to something and receive something free – a packet, a DVD, a CD – something that shows what they've learned and can share with someone else." This same respondent added that "even just a printed copy of the PowerPoint presentation" is better than no takeaways at all. Another respondent said that takeaways provide an "added value" to business owners and provide them with "something they can use later, back at work." One respondent suggested providing "easy takeaways" such as "efficient light bulbs – the funky swirly ones – so they can take one and try it at their homes or their businesses." Another respondent suggested, "Give out a phone number where they can follow up, or give out a web address that they can check out and see something functional and intuitive."

Desert respondents stressed the virtue of "simplicity, simplicity, simplicity," stating that business owners "want practical information on saving energy to apply in their own businesses." In one respondent's words,

> "Leaders of businesses are individuals trying to figure out: "How can I save money? How can I do this quickly and easily?" The more turnkey you can make it, the more effective it will be. Show these people an easy way to do it, show them the changes they can make."

Many respondents suggested using visual aids to provide simple demonstrations of the potential for saving money through energy efficiency. In the words of one respondent:

> "Make it very visual and easy to understand: show them something where you have one light bulb plugged into a meter that shows how much energy it uses, and then the energy-efficient [bulb] plugged into another meter, so they can see that the efficient one uses less energy. Help them translate the energy savings into dollar savings."

Many respondents in both of the study areas suggested providing case studies on local businesses or "local testimonials" about energy efficiency. "Show them real-life examples in their community," suggested one respondent; "show case studies of how local business X did Y project and got Z savings," said another. Another respondent stated, "Give us real-world applications – we don't want scientific principles, we want a case study of a particular local business where they did something we could do; we want [Edison] to show us how it works and how we can do it, too."

"Work with them and find out what their needs are," suggested one respondent, "and go through their networks to get the bodies into the room" for workshops. Several respondents and one Edison contact mentioned that the desert is home to approximately 130 golf courses, and one respondent indicated that golf course owners must be interested in conserving power required to pump water for irrigation; golf courses may be a good partner for a course on efficient pumps and motors. Water agencies in the desert are also concerned with pump and motor efficiency and could be another beneficial partner for Edison.

In addition to the other suggestions, three respondents suggested that a free breakfast would add value for workshop attendees. "They have to eat breakfast anyway," said one respondent, "so why not eat breakfast and learn how to save money at the same time?" Another respondent stated, "Most meetings draw more people if there's a free meal, and breakfast time is the best for high attendance."

Timing and Length. Respondents were asked to indicate the time of day, week, and year that would be most appropriate for workshops in their area. Across both of the study areas, all but one respondent (9 out of 10) felt that a 4-hour workshop would be unlikely to draw many attendees, reasoning that four hours is far too long for small business owners to be away from their businesses. The Coachella Valley respondent who indicated that a 4-hour seminar would be acceptable indicated that, "Asking these [business owners] to give up half a day or a day isn't going to work unless you can promise the information you give them is *really* going to make a difference on their bottom line."

When asked to indicate which time of day would be best for workshops, Coachella Valley respondents were more likely to say a breakfast meetings would be best for business areas in their area. All of these respondents suggested a workshop length of one to two hours somewhere between the hours of 7:30 and 10 a.m., and two noted that "getting them to stay until 10 might be difficult." Of the two other Coachella Valley respondents, one indicated that a half-day (4-hour) meeting would be acceptable (provided it met the requirements described above), and the other did not specify a preferred time beyond stating, "Four hours is just too long."

In the Temecula/Lake Elsinore region, two of the three respondents indicated that a lunch meeting is best, and that meetings shouldn't run longer than 1-1/2 or two hours. They also indicated that mid-week workshops are best "from a commuting standpoint," and that "Monday and Friday are a nightmare for commuting." Another respondent recommended Tuesday meetings for the same reason. The remaining respondent did not specify any preferred timing for workshops, and Coachella Valley respondents indicated no day of the week preferences.

All of the Coachella Valley respondents had suggestions as to the time of year that would be best for training workshops, while none of the respondents in the Temecula/Lake Elsinore region indicated a preference. The responses, although relatively spread out, indicate a preference for April through July, followed by September through October. Two respondents felt that the summer months (June through August) were the best time for training because it's typically the slowest season, yet several others indicated that many business owners vacation during the summer months.

Many respondents indicated that in some cases, a workshop's topic should determine when the workshop is held; for example, several respondents indicated workshops on air conditioning or cooling topics might have the most impact during May, June, and July. In the words of one respondent, "it's a slower time, but air conditioners are really going and bills are highest so this will be freshest in people's minds – you want their attention?

They just got a bill that's $1,000 higher this month because they're using their AC. If you tell them you can help lower the next bill, they'll fill the room." Another respondent agreed, "Have the AC courses during the middle of summer when people are paying their high power bills and looking at their monthly expenses – they're seeing how much they spend for AC in 115° weather, so you can get them in on the topic while it's fresh in their minds."

Format. Respondents unanimously agreed that in-person training workshops are the best. One Temecula/Lake Elsinore respondent felt that businesses in his area were "Internet-savvy" and may attend an on-line seminar. A Coachella Valley respondent indicated that the opposite might be true in the desert: "We're about 10 years behind the rest of the state technology-wise, so an Internet-based [workshop] would miss a sizeable portion of the population."

Barriers to Course Participation

All respondents indicated that time is the main barrier to course participation, and several expressed concern that a course may not provide value to justify the time commitment. Respondents emphasized that because most of their local businesses are small (five or fewer employees), the owner generally works in the business on a day-to-day basis and may be unable to run his or her business if he or she takes time to attend a workshop during the workday. When referring to time, respondents indicated that not only was the time spent at a workshop a concern, but also the time spent traveling to and from workshops; many residents in both study areas are hours away from CTAC, for example, and residents in the Temecula/Lake Elsinore region indicated that even though the center may not be far away in terms of miles, the area's traffic problems could create an hours-long commute to and from the center, depending upon the time the workshops were offered.

Respondents also indicated concern over the relevance of the information presented: "People have to recognize that you have information that would be valuable to them," said one respondent. "They're concerned about the relevance of the message," said another. A small number of respondents indicated that language issues may also be a barrier to participation.

Awareness of the workshops may be another barrier. While no respondents specifically mentioned it, one representative of a Chamber of Commerce brought up a lack of advance notice. "I didn't get the fliers from Edison in time to get them in the newsletters. If they could get them out sooner, get them to us further in advance, that would help us here."

Another perspective offered by respondents was that the course titles may be too "vague" and "uninteresting," or perhaps they don't accurately convey the information that will be presented in the workshop. One respondent said, "Sometimes, in speaking with participants, they thought the course would cover something completely different from what it did – [Edison should] make a clearer point on what the focus is on. Provide more detail as to what the content is, because the course titles may be a little bit vague." This

may be a barrier to participation, as well as a cause for disappointment for some participants.

Other contacts indicated that it would be helpful if Edison could follow up by telephone with information regarding workshops on a periodic basis. Periodic contact would allow CTAC to stay aware of the changes in personnel at the organizations and make sure that information is still being disseminated throughout the region. An individual who assumed the former contact's role at a Chamber indicated awareness of the CTAC-sponsored workshops but said that he had never seen "any publications or e-mails relating to it, no topics or calendars of events or anything like that."

Many respondents emphasized the importance of using local businesses as subjects for case studies in the Coachella Valley. "Businesses here are a different animal," said one respondent, "and they're skeptical that what works someplace else might not work [in the desert]."

Five of the seven desert respondents suggested case studies of local businesses:

- "[Business owners] need to see actual results, maybe case studies with real-world experience to show."
- "Show similar businesses – maybe competitors! – that save money in the same way that you could. Lower energy bills may mean your competitor can lower his prices and out-compete you. That's the hook to draw people into these [workshops]."
- "Show concrete examples of how it works – use local business names and locations. That'll make an impact."

Several respondents indicated their impression that, "Business people in the desert are a different breed" with unique concerns and needs. To help identify training needs of desert business owners, Edison should adopt the same approach as mentioned by approximately two-thirds of the Chamber of Commerce representatives included in the interview group: surveys. Edison should consider surveying business owners in the Coachella Valley to determine the energy-related topics that would interest them most. One respondent indicated that his Chamber's "membership committee does surveys to find out what time, what hours, what days of the week, and what topics [business owners] want to see [for our courses], and then they outline the courses for six to 12 months ahead of schedule." Another respondent indicated that his Chamber of Commerce holds monthly educational luncheons and explained, "We do surveys on desired subjects for these lunches and we meet those needs by using those topics at future lunches."

Perception of SCE and CTAC

Perception of SCE as a source of information. Respondents in both of the study areas had mixed responses when asked whether they felt that business owners in their areas trusted the utility. They cited many contributing factors including comparatively high rates, the Enron scandal, and blackouts or brownouts as affecting their perceptions of Edison. One respondent indicated that in the Coachella Valley, "the perception among

businesses is that utilities in general are price-gouging – prices are higher than they need to be, and they're higher every time you look."

Six of the seven Coachella Valley respondents cited that a source of Valley residents' frustration is the belief that Edison's prices are higher than another local power provider, IID Energy. Some of the comments suggest that the reasons for Edison's rates being higher are not well understood.[21]

- "Because [Edison's] the prices are higher than IID Energy's, the stigma is there."
- "Lots of people out here have IID Energy and they don't have to deal with SCE, and those people don't *want* to because SCE's rates are *so* much higher than IID Energy's."
- "Residents are not happy with [Edison] because the rates are quite high and they lose power a lot in SCE territory in the summer time when it's 115° – and rates are higher in the summer, too, and people do not understand it; they've never been told *adequately* why the rates go up when their need is the greatest to cool the place down – elderly people, fixed-income people, they don't understand, and there's a great deal of frustration with SCE."
- Another respondent stated that he doesn't believe anyone "holds a grudge" against Edison, but admits, "they wish their rates could be less." This same respondent indicated that residents and business owners wonder, "If IID can do it for less, why can't Edison?"
- Another respondent agreed that negative perceptions of the utility exist in the Valley, and suggested that "the only way to overcome these negative perceptions is to put something out there that shows there's a value-added here – sure, IID Energy is cheaper, but we can give you X, Y, and Z."

Two respondents indicated that Edison has begun regaining trust in the Valley: "We've gone through an energy crisis where nobody knew who to believe, but [Edison is] starting to build [trust] again." Several respondents identified Edison's Public Affairs staff as having key roles in establishing Edison as a positive force in the community. Two respondents indicated that the Public Affairs staff has been instrumental in building trust in the community; in one respondent's words, "It's a tentative relationship, but the fact that [the two Public Affairs staff members] are so active in the community really gives it a personal face. For many years they were the faceless entity, *the utility*, but now they've got a personal identity and that's important." Another respondent mentioned his impression that, "Edison does a good job of trying to be a good community partner and trying to be visible; [the two Public Affairs staff members] do a darn good job."

In the Temecula/Lake Elsinore region, one respondent indicated that Edison is generally perceived as a good source of reliable information on energy efficiency. He noted, "We wish our rates were lower, but I don't think anyone would take it so personally as to not

[21] Edison reports that IID does not have to pay state surcharges, tariffs or fees that SCE, as a shareholder-owned utility, is required to pay.

trust Edison because of that." The two other respondents indicated that distrust of Edison is fairly high, perhaps stemming from a general distrust of energy companies due to the Enron energy scandals: "The whole Enron shell-game, all of the smoke and mirrors – I think that led a lot of people to think it goes on everywhere. There's a lot of distrust." Another respondent stated that, "Dealing with Edison is very frustrating [because] they've got maintenance scheduled during peak times, they're shutting plants down, losing power – it's hard to trust them."

Perception of CTAC as a source of information. When asked how business owners perceive CTAC as a source of information, the majority of respondents were "very doubtful" that business owners in the two study areas were at all aware of CTAC. One respondent in the Coachella Valley said, "Some of [the businesses] are aware [of CTAC], and I imagine they're a fairly reputable source of information." In the Temecula/Lake Elsinore region, respondents had similar doubts regarding business owners' awareness of the center, and one admitted, "even if they are [aware, the center is] still too far away."

6.5 Conclusions and Recommendations

The in-depth interviews and secondary research provided keen insights into the needs of the HTR populations within Edison's territory in Riverside County. In 2004 participation in CTAC courses offered in both communities was the same. Participation in three workshops offered only in the Coachella Valley area was low, but this may be a function of the courses offered and not general characteristics.

We found little difference in the responses between those representing organizations in the Coachella Valley versus those from the Temecula/Lake Elsinore region. (In addition, the Coachella Valley respondents were consistent with each other in their responses.) Respondents recommended similar methods for reaching the target audience, the message the audience should be given and what is of most interest to the target audience. There was some indication that the Coachella Valley area would benefit more from courses offered in Spanish and that attitudes toward Edison may be less positive in the Coachella Valley area.

The interviews indicated, however, that a formerly negative opinion of Edison in the Coachella Valley is changing, at least among some businesses. Edison has done a commendable job of establishing a presence in the Temecula/Lake Elsinore and Coachella Valley areas. The work with Chambers of Commerce and other efforts by Edison's Public Affairs department was noticed and appreciated by some respondents. These efforts may have contributed to changing perceptions of the utility. Offering free workshops that are relevant to small businesses can only serve to improve Edison's reputation in the area.

Our recommendations, based on this research, apply to both areas of Riverside County, and are general enough to apply to other non-urban areas in Edison's service territory. The recommendations fall into three major categories.

- Increase awareness of local workshop offerings among area businesses,

- Tailor the marketing message to small business owners, and
- Tailor the courses to meet the needs of the small business community.

The remainder of this section provides greater detail on the recommendations arising from the in-depth interviews.

6.5.1 Increase Awareness

- **Continue to work with Chambers of Commerce to get messages to business owners**. CTAC's list of stakeholders for the Coachella Valley includes only two Chambers other than the Palm Desert Chamber and relies heavily upon the Palm Desert Chamber to disseminate information, but CTAC's program manager indicated that "there is no feedback loop in place to ensure that business owners are actually receiving information" about the workshops. Additional personal contact with Chamber representatives is necessary.
- **Broaden marketing efforts by sending materials directly to all Chambers of Commerce and additional business organizations**. This will expand upon the benefits of working through an organization with existing and loyal membership base by establishing new networks that include local governments and economic development agencies.
- **Update contact lists and establish personal relationships with these contacts**. The contact lists CTAC provided to the evaluation team included someone who had left the Chamber of Commerce over one year ago, and another contact that was completely unfamiliar with CTAC or of courses offered by Edison in their area. The lack of a personal relationship with these organizational representatives (indicated by the outdated information and lack of knowledge among some of these contacts) is a barrier to partnering to promote workshops.
- **Follow up with organizations after sending materials regarding course offerings.** Establishing the personal relationship and following up with contacts in the area will help CTAC communicate the importance of the courses (and the local business organizations' roles in promoting them) and will help CTAC better determine how well the information is being disseminated.
- **Establish an SCE presence in the community by participating in local events**. This will help Edison build additional trust through increased community presence. Respondents stressed the importance of in-person, face-to-face meetings and workshops and emphasized that putting a face with the utility would build trust within the community.
- **Provide information to businesses organizations on locally held workshops with sufficient lead time**. This lead time will allow organization to inform their members in newsletters, at meetings and in e-mail bulletins.
- **Pursue opportunities to coordinate with the Coachella Valley Economic Partnership.** The Coachella Valley Economic Partnership recently received a grant with three priorities, including health, tourism, and energy, and is

developing an energy and technology program with local colleges (including College of the Desert, California State at San Bernardino, and the University of California at Riverside). This may be an opportunity to piggyback on existing efforts and show a presence in the community.

6.5.2 Marketing Message

The recommendations draw upon the interviews discussed above (within Riverside County) and on interviews conducted with education and workshop experts as part of the Best Practices component of this study. The recommendations focus on providing the target audience with a message that makes it clear to them what they will get out of the workshops and that the information is from a trusted source.

- **Marketing should emphasize how attending the workshop will help the businesses bottom line – saving money.**
- **Materials should make clear what the participant will get out of the class.** This should include what the participant will be able to do with the information they obtain and that they will walk away with written or other materials.
- **Endorsement or co-sponsorship by local organizations should be included wherever possible.**
- **Work shop titles should be clear**. The workshop title should convey exactly what the workshop will cover in lay terms.

6.5.3 Tailored Courses

- **Offer shorter (2- or 3-hour classes) early in the morning**. It is difficult for small business owners to be away from their store. They are hesitant (even when able) to take time away from the store. Courses offered early in the morning (that include breakfast) are more likely to draw this crowd.
- **Offer classes during the summer**. Although businesses are open year-round, activity is decreased during the summer months and business owners will be more likely to have time to attend the course.
- **Offer some Spanish-language classes.** Although most business owners speak English fluently, offering courses in Spanish reflects a willingness to reach out to the community. It may also increase attendance among native Spanish speakers who are less comfortable with their English.
- **Provide materials to reference after the class**. Many participants will want materials that they can reference after the class. Reference materials will increase the sense that they have walked away with something and will increase the probability that they will take action on what was covered in the course.
- **Provide courses that are highly applicable to the area**. CTAC should select courses that are specific to small businesses and that focus on cooling and lighting costs or technologies. Since these are business owners, and not technical people,

the information presented should be at the level of someone who will be purchasing, not someone who needs to understand how things work.

- **Include examples and/or exercises that are targeted to this area**. Half of the interview respondents indicated that case studies of local businesses are key.

7 Southern California Gas Company: "Lighting Controls for Energy Management" and "Advanced Lighting Technologies"

7.1 Introduction

7.1.1 Background

Southern California Gas Company (SCG) offers a half-day workshop on lighting controls at the Energy Resource Center (ERC) located in Downey, California. In 2003 the center expected 50 to 60 attendees to this course, obtained 49 registrants, and had 30 people attend. In 2004 the course had only 15 attendees. A related half-day seminar, Advanced Lighting Technologies, experienced lower-than-anticipated attendance as well. This case study examines the reasons for the low attendance in these two courses. We combined them into a single case study because they are highly related in content (lighting), target market, and the identified problem (low attendance). Both seminars are used partly as entrée into the Savings by Design Program, which provides services and financial incentives to building owners and design teams for the construction of high-performance nonresidential buildings.

7.1.2 Objectives

The main objective of this case study is to find ways in which the ERC can increase participation in these lighting workshops. To meet this objective, research was conducted to achieve the following goals:

- Clarify the roles of different respondent groups in lighting decision-making
- Explore the levels of interest in these courses within the target market and the level of need for these types of workshops
- Clarify existing marketing channels and messages
- Identify additional marketing channels and messages
- Distinguish factors that would motivate target market to attend seminars
- Identify content necessary to provide value to target population
- Determine timing preferences for training
- Clarify barriers to participation in training
- Explore target market perceptions of SCG and the ERC.

We collected a majority of the information by conducting in-depth interviews, a qualitative research method. Because the respondents represent only a small segment of the total population, in-depth interviews do not confirm hypotheses, nor do they allow for estimates regarding the percentage of people who hold a certain opinion or attitude.

7.1.3 Section Layout

The remainder of this chapter begins with descriptions of the two lighting courses. Next, we discuss the research methodology and findings from in-depth interviews. We

conclude with recommendations as to how SCG can more effectively offer lighting courses that are attended and well received by participants.

7.2 Marketing

ERC workshops are marketed through four channels:

1. Listed on the ERC website.
2. Included on the ERC calendar that is distributed to individuals (former attendees), other Energy Centers, and to organizations.
3. Advertised via e-mail to a more limited list. These workshop announcements were sent to members of the Los Angeles chapter of the United States Green Building Council (USGBC).
4. Promoted at trade shows.

ERC staff reports that the course was designed to attract design professionals (architects, design engineers, and lighting designers) and business/building owners who are involved in new construction or major renovation.

7.2.1 Course Descriptions

The two lighting courses are described on the ERC website and on the calendar as follows:

Lighting Controls

This half-day, intermediate level, interactive workshop is designed for anyone who wishes to take lighting to the next level in efficiency by incorporating energy management lighting controls. The workshop will explore lighting control strategies and their effectiveness in saving energy. The class then implements these strategies in a challenging exercise. Topics include: local and building level controls, control strategies and corresponding control equipment, energy savings and building codes and standards related to lighting. Education Credits: four AIA[22] learning units

Advanced Lighting Technologies

This half-day intermediate level, interactive workshop is designed for anyone who has a basic knowledge of lighting and wishes to understand the newer, advanced lighting technologies. With an emphasis on energy savings, this course explores the operation, performance, and issues associated with advanced technologies, providing attendees with a basis to evaluate other new technologies as they emerge in the marketplace. Education Credits: four AIA learning units.

[22] AIA – American Institute of Architects

The e-mail description Lighting of Controls for Energy Management is in color. This description highlights "Regulate energy usage-lower energy costs" and starts with "Put your clients in charge of energy savings."

7.2.2 Marketing Efforts

We used the participant evaluation surveys completed at the end of a workshop to determine how they had heard about the workshop. E-mail is the most frequently reported (79% of attendees) method of hearing about the workshop. The e-mail list was more targeted than the other approaches, having been sent to members of the USGBC, an audience already interested in energy efficiency in new buildings. Four attendees report hearing about it from the calendar, but two of these also received e-mails about the course. The website, direct mail, and word of mouth were reported by three attendees each.

Table 7.1: How Participants Heard About Course Lighting Controls for Energy Management 2003*

	Number of Responses	Percent of Respondents**
E-mail	23	79%
Calendar	4	14%
Website	3	10%
Direct mail	3	10%
Word of Mouth	3	10%
Trade show	0	0%
Number of respondents	**29**	

* The Advanced Lighting Course evaluation form did not include this information.
** Totals more than 100% because some respondents reported more than one information source.

7.2.3 Observations on Marketing

We reviewed the marketing approach and materials in light of what we learned from talking to experts in targeted markets and conducting a Best Practices study discussed in a later section. We provide the following observations in light of the results of these two activities.

The e-mail approach to marketing appears to be the most successful in attracting participants to this course. In general, e-mail is an effective approach for reaching constituencies who are familiar with the services offered. The ERC's approach to e-mail is a low-cost and effective approach to marketing the program but may not result in attracting new attendees to the center.

The calendar and website listing appear less effective in attracting participants to these classes. Target audiences who are unfamiliar with the ERC are highly unlikely to explore

the website. If they do, they are unlikely to find the courses on lighting unless they are aware that lighting courses exist. Currently, there is no obvious way to find courses by topic, or courses geared toward a specific profession. Instead, courses are listed by when they are offered. We do not know how many of the target audience receive or look at the ERC calendars of events.

The messages contained in the course descriptions are too general. They do point out "interactive" and "challenging exercise," but they do not identify a specific target audience nor speak to the issues that may be of concern for particular professions. The benefit to particular participants – what they will leave being able to do – is clearer in the Advanced Lighting Technologies course description than for the more basic course. These issues are discussed in more detail in the remainder of the report.

7.2.4 Attendees

Attendees of the 2003 Lighting Controls courses represented various types of organizations, as shown in Table 7.2. The largest group attending the course represented government entities in Southern California, primarily municipalities such as the City of Los Angeles.

Table 7.2: Attendees – Lighting Controls for Energy Management 2003

Attendee Affiliation	Lighting Controls for Energy Management	Advanced Lighting Controls
Government entities (mostly municipalities)	14	11
Architecture or engineering firms	2	8
Honeywell	5	7
Miscellaneous	10	13
Total Attendees*	**31**	**39**

* Miscellaneous includes utility representatives (SCE), schools, miscellaneous business and company names that we could not identify with a particular business type.

Our review of the attendee list shows that many of the same organizations were represented at the two courses. We found no participants who had attended both workshops, but this may be because the Advanced Lighting Technologies was offered in February 2003 and the Lighting Controls (more basic) course was offered in May 2003. (Attendees to the advanced course may have participated in the basic course in the previous year.) The fact that many organizations were represented in both courses indicates satisfaction with the course, as people will pass on to their colleagues information regarding courses they have attended.

Attendance in 2004 dropped to 15 for Lighting Controls. Advanced Lighting Technologies had 39 attendees in 2003 and 32 in 2004. The attendance at all of these workshops is lower than projected or desired by the ERC.

7.3 Methodology

The evaluation team conducted in-depth interviews with representatives of the industries targeted for the courses. In-depth interviews are a qualitative research method useful for identifying and exploring the range of attitudes, opinions, and preferences on a particular topic or issue. The open-ended nature of these interviews allows a researcher to make unexpected connections or to discover alternative ways to think about a topic. However, because they represent only a small segment of the total population, in-depth interviews do not confirm hypotheses, nor do they allow for estimates regarding the percentage of people who hold a certain opinion or attitude. The information presented in this report should thus be evaluated within the context of the qualitative nature of the research.

During November and December of 2004, we conducted nine in-depth telephone interviews with architects, engineers, lighting designers and consultants, and interior designers. The distribution of completed interviews among these types of respondents is shown in Table 7.3 below.

Table 7.3: Completed Interviews by Respondent Group

Respondent Group	Completed Interviews
Engineer	2
Lighting Designer/Consultant	3
Architect	2
Interior Designer	2
Total Interviews	**9**

We developed an initial sample frame by conducting an Internet search to identify organizations that serve or are comprised of members of the target audience for the classes. In some cases, we were already aware of the organization and used the Internet to identify an initial point of contact in Southern California. As we contacted people for interviews, we asked them to identify additional organizations or points of contact. (Table 7.6 shows the organizations represented by the respondents.) We sought out representatives of professional organizations in the targeted professions to get a broader perspective than that of individual practitioners. In most cases these representatives worked within the affiliated field. They also proved to be valuable sources of referrals to other potential respondents.

Interviews lasted approximately 40 to 45 minutes. In a few cases respondents were unable to commit to this amount of time so the interviewer used discretion in identifying key questions to maximize the benefits of these interviews.

7.4 Findings

7.4.1 Research

The in-depth interviews conducted for the SCG-ERC case study gauge respondents' awareness of and interest in energy efficiency in general, energy-efficient lighting, and training courses related to these topics. Respondents were asked for their thoughts on barriers to participation in training classes, as well as the most effective marketing messages for attracting attendees. Respondents were also queried as to their perceptions of SCG and the ERC.

Roles

Respondents were asked to provide some background information about their roles in lighting design and specification processes for different types of projects. Respondents reported varied responsibilities, depending on the respondent's job title and the type of building project. In general, design professionals are not involved in smaller, particularly retrofit, projects. The role of design professionals in lighting varies by profession.

In general, design professionals (architects, engineers, interior, and lighting designers) are not involved in lighting decisions for small retail establishments. Respondents indicated that storeowners (or contractors hired by the owners) make lighting decisions for small retail spaces (such as mom-and-pop stores) without the influence of lighting or design professionals. These lighting decisions are generally made based on first-cost considerations, with little (if any) consideration given to operating costs or energy efficiency. Two respondents felt that these trends are changing somewhat and that small storeowners are becoming more "efficiency-savvy," but these respondents were in the minority.

Architects. Architects indicated that while they may handle lighting specification for small, simple jobs (such as a minor remodeling project); they generally hire a lighting consultant or lighting designer to make technology choices for new construction and large renovation projects. Some architectural firms employ electrical engineers who are also involved early in the new construction development stage, but for most projects, an outside lighting consultant is hired. As stated by one respondent, "Architects… set the tone and concept of the lighting, but the lighting designer is really the one who develops the concept and becomes more specific in terms of the lamps and fixtures."

Engineers. Engineers indicated that they are sometimes involved with lighting in new construction projects but rarely in remodeling projects. Architectural firms may use internal engineers or hire an engineer to specify lighting in the development stage of a new construction project. For large new construction projects, an electrical engineering

firm may be part of the design team, and in that case would be responsible for specifying all of the building's lighting and lighting controls.

Interior Designers. Interior designers may also play a role in new construction projects, depending upon the type of project. For spaces with "especially creative design elements" (such as some office reception areas and specialty retail stores), an interior designer may be hired to work alongside a lighting consultant or independently to specify fixtures and lamps. Interior designers may prepare a lighting plan that details the locations of fixtures and switches within the space. That same designer may decide upon specific technologies or may work with a lighting consultant who is "more familiar with lighting products on a technical level."

Lighting Designer/Consultant. Lighting designers/consultants are the most knowledgeable and interested in lighting technologies. They are the most likely to specify lighting in new construction and major retrofits (larger spaces) and when involved in a project, have substantial influence. Most respondents noted that while the client ultimately decides the type of lighting, everyone involved (clients, architects, and engineers) generally follows the lighting consultants' recommendations.

Retail Store Designers. Large department stores and retail store chains generally employ store designers with some degree of lighting expertise. While floor staff and maintenance personnel may be responsible for replacing lamps on a day-to-day basis within each store, the store designers are responsible for designing and lighting store displays. Store designers are generally involved in new construction and major renovation projects, as well as the design of changing store displays. They have the greatest level of influence on the lighting used in these spaces. Very large corporations may employ energy managers with some role in technology choices, but respondents felt that the ultimate choice in lighting technologies would be a store designer's responsibility.

Interest in the ERC Lighting Courses

Interest in courses on lighting controls and technologies varied according to respondents' job titles. Respondents were asked who the appropriate targets would be for these courses and overwhelmingly concluded that lighting designers would be most interested in courses on lighting controls and advanced technologies among the respondent groups.

Four of the respondents indicated that architects should not be among the target audience. Because architects generally use lighting consultants to specify a building's lighting, the architects interviewed felt that courses on specific controls and technologies were not very relevant to their line of work. One architect was aware of a professional organization that held courses on lighting technologies for architects and indicated, "Nobody goes to these sessions; [interest is] minimal because we hire lighting designers." One of the lighting designers indicated that because architects so frequently hire lighting designers, architects' knowledge of the technologies is likely too low to support adequate understanding of advanced lighting course material.

The interior designers interviewed indicated that courses on lighting controls and advanced technologies would likely be too technical for professionals in their field. As one respondent said, "lighting information is so technical by necessity that [interior designers] feel overwhelmed by it… [lighting specification is] such a specialty that it's best left to the lighting professionals." Both interior designers indicated that they are interested in information about lighting technologies but that both course descriptions sounded "too tech-y" for interior designers.

Awareness

Awareness of the Energy Resource Center. As shown in Table 7.4, three of five respondents indicated that they had heard of the ERC prior to their interview. In addition to the five local respondents, two respondents (an engineer and an architect) who were not local to Southern California were aware of the ERC. Another respondent was not aware of the ERC specifically, but knew that SCG offered training courses.

Table 7.4: Awareness of the ERC – Local Respondents

Respondent Group	Aware	Unaware	Total Local Respondents
Lighting Designer/Consultant	1*	0	1
Architect	1	1	2
Interior Designer	1	1	2
Total Interviews	**3**	**2**	**5**

* This respondent indicated that he was aware that the ERC sponsored training courses but indicated that he was unaware that the ERC offered courses on topics not related to natural gas.

Awareness of the ERC Workshops. One-third of the respondents indicated awareness that the ERC offered training workshops prior to the survey (see Table 7.5). One lighting consultant was aware of the ERC and workshops offered by the center but indicated that prior to the interview; he was unaware that the ERC offered workshops on topics unrelated to natural gas. While neither of the electrical engineers was aware of the ERC's workshops, one indicated that she was aware of workshops offered by SCG, yet she was unaware of the ERC and thus made no connection between the ERC and the workshops.

Table 7.5: Awareness of the ERC Workshops – Local Respondents

Respondent Region	Aware	Unaware	Total
Coachella Valley	2	5	7
Temecula/Lake Elsinore	2	1	3
Total Interviews	**4**	**6**	**10**

* One respondent indicated that he was aware that the ERC sponsored training courses but indicated that he was unaware that the ERC offered courses on topics not related to natural gas.

Information Sources

Respondents indicated heavy reliance on professional membership organizations and trade associations (as well as these organizations' websites, newsletters and other publications) to stay current in their fields. Table 7.6 shows the membership organizations mentioned within each respondent group. Several respondents also mentioned newspapers and websites as good sources of information. Specific websites mentioned by respondents include the US Green Building Council (USGBC) Leadership in Energy & Environmental Design (LEED) website, the Sacramento Municipal Utility District (SMUD) website, and the Pacific Gas and Electric (PG&E) website as good sources of information.

Table 7.6: Membership Organizations by Respondent Group

Respondent Group	Membership Organization
Engineer	Illuminating Engineering Society of North America (IESNA) International Association of Energy Engineers (IAEE)
Lighting Consultant	California Association of Lighting Efficiency Professionals (CALEP) Illuminating Engineering Society of North America (IESNA) International Association of Energy Engineers (IAEE) International Association of Lighting Design (IALD) National Council on Qualifications for the Lighting Professions (NCQLP)
Architect	American Institute of Architects (AIA)
Interior Designer	American Society of Interior Designers (ASID) Interior Design Educators Council (IDEC) International Interior Design Association (IIDA)

Marketing

Methods for Reaching Target Population. All of the respondents indicated that communicating with potential workshop attendees though professional and trade associations would be the best ways to disseminate information on courses on lighting technologies. Every respondent cited associations and their publications as good sources of information (see Table 7.6 above). Respondents also indicated that information about these workshops on their associations' websites would reliably reach others in their fields.

Two of the respondents were board members of professional organizations (the American Institute of Architects [AIA] and the American Society of Interior Designers [ASID]), and both indicated that their respective organizations would likely be interested in a partnering with the ERC. The AIA representative indicated interest in hosting an SCG-sponsored workshop at one of its chapter offices, and noted AIA may be interested in a more a general partnership in which workshops would not necessarily have to focus on lighting topics.

Respondents also mentioned conferences as both a good way to market courses or as a venue in which to offer them. One respondent mentioned the NeoCon and WestWeek conferences as good ways to reach interior designers, architects, and other design professionals with information about efficient lighting and lighting technologies. The same respondent indicated that if a seminar on these topics were to be offered at one of these conferences, she and other interior designers would be likely to attend. SCG may wish to consider offering seminars at these and other conferences targeted specifically to the backgrounds of conference attendees (e.g., lighting from an interior design perspective at a conference for interior designers).

Effective Marketing Messages. Five themes emerged (see Table 7.7) in response to queries regarding what marketing messages would be most appealing to the target audience. Five respondents mentioned sustainability as a key message ("Sustainability is *the* message right now."), and five said that messages should be specifically tailored to a particular group of potential attendees. Both interior designers, for example, indicated that they would be unlikely to attend *any* course unless the course marketing specifically indicated that it was a course for interior designers. "Target interior designers specifically," said one respondent, "or you won't get them to go." One of the architects said the same about his profession, and two other respondents mentioned that architects would be unlikely to attend if the course were not marketed specifically as a course for architects.

Four respondents indicated that education credits are important. One interior designer indicated that the California Council for Interior Design Certification (CCIDC) criteria for Certified Interior Designers require 10 hours of continuing education biennially to maintain certification. One of the architects indicated that at least half of California's architects belong to the AIA, which requires 18 hours of training per year to maintain accreditation. Another respondent indicated his impression that, "Architects are particularly hungry for AIA credits" because of the Institute's requirements. Eligibility for education credits are thus important to consider when developing workshops and crafting marketing messages.

Table 7.7: Marketing Themes

What marketing messages are meaningful/appealing?

Marketing Theme	Number of Mentions
Targeted Message (workshops for a specific target audience)	5
Sustainability	5
Education Credits (American Institute of Architects or other Continuing Education Unit (CEU) credits)	4
Non-Energy Benefits (improved color rendering, lower maintenance costs)	3
Money Savings	2

An architect mentioned a program in which young architects participate before they can register to take the architecture examinations called the Intern Development Program (IDP). In California, the program is known as the CIDP. One component of the CIDP is a training requirement; one respondent suggested that the ERC might consider offering a "CIDP-worthy workshop [to] get a larger audience of architects."

Three respondents mentioned the non-energy benefits associated with energy-efficient lighting, including improved color rendering, longer equipment life, and lower maintenance costs. One lighting consultant specifically used the term "non-energy benefits," while the others referred to the individual benefits themselves; for example, in the words of one interior designer, "Knowing that an energy-efficient lamp is cool to the touch while halogen bulbs are not – that's a benefit for the energy-efficient [lamp] interior designers want to hear about."

Two respondents indicated that if marketing materials specifically mention that a course will provide information on saving money for their customers, they'd be likely to attend. In the words of one engineer, "It all translates to dollars if you want to get someone's attention for a course." An interior designer indicated that "most clients are more interested in saving money" than they are in any aspect of design. If the course provides easily implemented ideas on how to save their clients' money, they'll be able to serve their clients better and potentially gain a competitive edge.

Content and Format

Several questions in the in-depth interviews addressed issues associated with the specific content and format of lighting courses (or marketing materials) to motivate people to attend and to provide value to attendees.

Motivating Companies to Send Employees to Training. Respondents were asked to describe any factors that might influence a company to send its employees to a training workshop. Responses were focused in three areas: education credits, free food, and the promise of delivering their employees useful, easily implemented ideas on how to better serve their clients and gain a competitive edge.

The architects indicated that, "AIA credit is key," but also shared their impressions that architects would be unlikely to attend courses on advanced lighting technologies or controls. Interior designers also stressed the importance of education credits in motivating companies to send their designers to training, "Credits are a good way to make sure companies send their people in [to workshops]; they want their designers to maintain certification."

Several of the respondents indicated that "free lunch" is a motivator. "I don't want to sound facetious," said one respondent, "but a free meal is a big motivator for a lot of people; it's sad but true." While the promise of a free meal won't necessarily motivate an employer to send employees to training, it may motivate the employee to attend.

In addition, many respondents stressed that if a workshop promises to deliver its attendees useful, practicable information that will help them provide value to their clients, they'll be likely to send their employees. "Companies should want their employees to be knowledgeable so they can be more competitive." Workshops that present information on "cutting-edge technologies" could potentially provide a company with information that "the other guy doesn't [have], which gives [that company] a leg up on the competition."

Providing Value. When asked what factors would be necessary for a workshop to provide value to its attendees, many respondents emphasized the applicability of the information in their fields. "Show me how I apply this knowledge and make it work in real life," said one respondent; "Give me some information I can actually use when I get back to work." From this perspective, value is provided through connections between the information presented at a seminar and the day-to-day work in which attendees engage.

Respondents also stressed the importance of targeted information in response to this question (as they did in response to the question on marketing messages). Interior designers again mentioned that they "don't want to hear about technical stuff like foot-candles," but would prefer to learn about the different lamps, their color rendering capabilities, how much heat the lamp will produce, and the size of the area these lamps will illuminate. In the words of the other interior designer, "the information really doesn't have to be super-technical; we really don't want that." Three respondents (including the architects) indicated that architects have limited knowledge about lighting because they don't need more than that to be effective in their work. These respondents suggested lighting courses specifically targeted to architects because, in the words of one architect, "it might provide information an architect could actually understand and use."

One of the interior designers suggested that courses with specific workshop titles such as "Seminar for Interior Designers" or "Seminar for Commercial Designers" with appropriate content would be effective in reaching members of the interior design profession. Focusing on content that is "too decorative" would not be effective, but neither would content that is "too technical;" this respondent felt that achieving the proper balance would be crucial in enticing interior designers to attend. SCG might

consider offering one lighting course specifically for interior designers, for example, and a separate lighting course to meet the needs of electrical engineers.

Workshops for advanced audiences on topics such as lighting controls, or especially technology-specific courses, might be best targeted toward electrical engineers. One of the architects interviewed said that members of his profession would be unlikely to attend workshops if the description did not mention architects, and two other respondents mentioned that architects would be unlikely to attend if the course were not marketed specifically as a course for architects.

Respondents also stressed the importance of engaging instructors and pragmatic, hands-on instruction and equipment demonstrations, indicating an interest in "seeing the equipment and how it works" and "learning from instructors who know what they're talking about." One respondent felt that "the quality of the instructor is half the battle" because lighting is a "dry" subject, and stressed that the instructor should be able to show attendees examples of the equipment to keep attendees engaged.

One respondent suggested setting up lighting loggers at the beginning of the workshop and showing participants how to download the data at the end of the workshop to show "the value of using tools to collect data." Several respondents indicated that showing workshop attendees how to use and install the types of equipment discussed in the workshop would be very helpful to them; "you can't underestimate the value of this," said one respondent, "actual equipment to look at is important!"

Many respondents stressed the importance of "takeaway" materials ("even if it's just an annotated copy of the PowerPoint presentation") for each workshop. "Having a takeaway to look at afterwards is usually helpful." Takeaway materials could provide additional value by including additional sources of information on a topic and contacts for attendees who have specific questions. One respondent noted that attendees "would want to know where they can get more information about a particular type of fixture or control, and [the utility] should make sure they know who to call with those questions." While the ERC may already provide such materials for many of its workshop offerings, the center may wish to consider increasing its workshops' instructors' focus on providing useful and effective takeaways.

Timing

Almost all respondents felt that any course longer than four hours would not draw many attendees, and several indicated that even four hours is a difficult time commitment for many professionals. Although one respondent felt that "the end of the year" is a good time for training workshops because many professionals are "scrambling to get all of their credits before the year ends," most respondents indicated that the winter holiday season should be avoided for scheduling workshops.

Several respondents were more focused on course content than on the time required for the course: "the length should be determined by the information you want to present," said one respondent; "set the length of the program to suit the information you really

need to convey," said another. Because of time constraints, one respondent suggested that workshop organizers should "keep it simple and only try to convey limited information," and that course content should be tightly focused to fill the allotted time.

Format

Nearly all respondents indicated a preference for in-person training over other types of offerings.[23] Two respondents mentioned that some organizations offer training via the Internet, but felt that in-person training was superior.

Barriers to Course Participation

All respondents indicated that time is the main barrier to course participation, and several expressed concern that a course may not provide value to justify the time commitment. "Maybe it's better to crank out more work in the office than to spend a few hours at the workshop," said one respondent. Respondents also mentioned that distance to the energy center and a lack of bilingual training may present barriers for some potential attendees.

Perception of SCG and the ERC

Perception of SCG as a source of information. Most respondents felt that the utility is a credible, reliable source of good information in general and on energy efficiency specifically. A few respondents indicated an impression the utility is the best source of information on energy efficiency, and one indicated uncertainty as to whether the utility has better information on energy efficiency than other sources but was confident that they had "good information."

One respondent felt that utility-sponsored training "might cause some skepticism" because "utilities have not adequately communicated why they want people to use less energy." This respondent felt that utilities should convey how everyone's best interests are served when less energy is consumed. The respondent noted the possibility that, "more sophisticated people may have already had this [information]," but still felt that utilities in general could do more to clarify their motivations for promoting energy efficiency.

Perception of the ERC as a source of information. Perceptions of the ERC were similar to those of SCG, in other words, generally positive. One architect noted that she has not attended any workshops at the ERC, but that she has heard that the ERC offers "good courses." She indicated that she overhears "at least one unsolicited comment each month" in that regard. Another respondent indicated that others had discussed attending workshops at the ERC and that the workshops are "reportedly good."[24] In general, respondents felt that the ERC is a credible source of information.

None of the respondents who were aware of the ERC and its workshops related any negative experiences with either the center or its offerings. Of the five respondents who were aware of the ERC and the three who were aware that the ERC offered training courses (see Tables 7.4 and 7.5), several made positive comments regarding experiences

[23] The remaining respondent was not asked this question because of time constraints for his interview.
[24] Both of these respondents cited time constraints as their reasons for not attending workshops at ERC.

that their associates and colleagues related to them regarding courses they attended at the center.

One respondent felt that utility-sponsored training "might cause some skepticism," and suggested that it may be beneficial for the utility to consider a partnership with professional associations or a local university. "The association or the university may be perceived as a 'higher plane' than a utility to the general public… [because] they have established a sense of credibility." Partnerships with credible institutions in the target audiences' communities may establish additional credibility for the utility while at the same time broadening its potential audience.

7.5 Recommendations

This section discusses the conclusions and recommendations based on the in-depth interviews with architects, engineers, interior designers, and lighting consultants. Many of these recommendations are consistent with the findings from the Best Practices interviews (conducted as part of this study) with education professionals.

Overall, we conclude that perceptions of SCG or the ERC are positive among those who are aware of the course offerings. Anecdotal evidence – hearsay reported by interview respondents, and organizations represented at more than workshop, as well as course evaluations – indicate high levels of satisfaction with the ERC courses.

Awareness of course offerings, however, does not appear ubiquitous among the target audience for these courses. In other words, the ERC does not need to overcome negative perceptions but does need to increase awareness of its course offerings among the target groups.

Limited participation in these lighting courses may, in part, be the result of an attempt to serve too broad an audience with these courses. The marketing media, message, and course content appear too broad to appeal or provide value to the target markets. The following recommendations address these areas more specifically. (We recognize that the ERC may already be engaged in some of the activities identified below.)

7.5.1 Marketing Media

- **Use professional organizations and their existing media to market courses to specific groups of professionals.** Respondents indicated heavy reliance on trade associations, professional organizations, and membership groups for information. At a minimum, organizations may be willing to send workshop calendars or information about specific courses to members along with their regular mailings, or to send an "e-mail blast" to members regarding specific courses. "E-mail blasts" for specific courses are preferable, as they provide an opportunity to focus the message on what is of interest to their members and on a specific event.

  Forming more strategic alliances with these trade and professional organizations may improve penetration of workshops within the target market. Representatives

of these organizations show a willingness to partner with the ERC. The Best Practices interviews indicate that educational organizations that have strong alliances with trade and professional organizations benefit from them (see Section nine for a more detailed discussion of these alliances.)

- **Market course offerings at professional conferences and trade shows.** Professional conferences and trade shows provide a unique opportunity to market to a concentrated and targeted group of professionals. Participating in these events also shows a commitment on the part of SCG to the organizations and professions represented and allows SCG staff to develop relationships with the attendees.
- **Offer courses in conjunction with professional conferences or trade shows.** The ERC should consider offering specific lighting courses in conjunction with a trade show that attracts a large number of the target audience – bring the workshop to them. The likelihood that many attendees may not offer services within the SCG service territory may be offset by the benefits of this approach (high attendance and visibility).
- **Continue promoting workshops through e-mail.** A majority of course attendees report hearing about the class via e-mail, indicating that this is an effective marketing tool. The Best Practices interviews, however, indicate that e-mail marketing is most effective for promoting courses to those who are familiar with your organization. We are unsure whether familiarity with SGC is sufficient recognition to draw participants unfamiliar with the ERC. E-mail announcements about the course from trade or professional associations, however, would overcome the lack of familiarity.
- **Use targeted marketing lists (with a tailored message as discussed below) to promote classes.**

7.5.2 Marketing Messages

- **Marketing messages should be specific to the professional group targeted.** Respondents were clear that the concerns and proclivities of the different professions currently targeted differ greatly. To attract members of a specific profession, the message must speak to their issues and needs.
    - Address the issues of interest to that particular profession. (See recommendation below regarding specificity of course content for more detail.)
    - Include the continuing education credits applicable to that profession.
    - Identify the profession by name.
    - Identify activities included in the course.
    - Identify what the audience will be able to do with the provided information (i.e., how it is of practical benefit to the participant).

7.5.3 Course Content

The ERC must deliver what is promised in the marketing materials. Word of mouth is a great advertisement for the center's courses, and if the courses deliver what is promised

in the marketing materials, attendees will be very satisfied and will pass that information on to others.

- **Course content should be specific to one (or possibly two) professions.** Architects and interior designers are interested in the aesthetics and color rendering of lighting, as well as saving the client money. Lighting designers and engineers are interested in technical information that will allow them to specify the appropriate equipment for an application. Business owners are interested in a bottom line message related to saving money and increasing sales; they are not interested in technical information but merely what options may be available to achieve their economic objectives.
- **Courses should include hands-on activities.** Regardless of profession, respondents want to be able to experience what they are learning. This includes being able to see new technologies or the energy savings of different approaches and to practice any new skills that are part of the course. Respondents to the Best Practices interviews indicate that learner activities (such as problem solving or group activities) greatly enhance learning as well as participant satisfaction. The ERC currently includes displays and demonstrations in its workshops.
- **Content must be practical and applicable to the participants in their jobs.** Respondents are willing to take the time away from work for education only if they believe that the course will provide information or skills that they can apply almost immediately. This also motivates management to send staff to educational opportunities.
- **Identify and obtain certification to offer additional educational credits.** Respondents indicate that educational credit is an important motivator for attending workshops. The ERC currently offers AIA credits. It should identify additional professional credits that it could offer that would attract targeted markets. One item mentioned by a respondent was the CIDP, which requires class attendance and may be a source for attendees early in their career.

8 SDG&E Case Study "How to Manage Your Business's Energy Costs"

8.1 Introduction

8.1.1 Background

SDG&E offers an array of workshops and seminars to its customers. The educational effort strives to serve a variety of segments and to offer educational courses tailored to each segment. Among the numerous energy-efficiency seminars offered by SDG&E is a course titled "How to Manage Your Business's Energy Costs," which is targeted to managers and owners of small- and medium-sized businesses. Over the last two years, attendance at these seminars has generally fallen short of expectations. For this case study, SDG&E desired to evaluate what steps could be taken to increase enrollment and participation in this seminar.

8.1.2 Case Study Objectives

Research priorities for this case study included identifying ways to overcome barriers to seminar attendance as well as examining market receptivity to other efficiency education approaches. Some of the research issues established for this evaluation were:

- How to interest the target market in the seminar and gain their participation
- Examine specific factors likely to influence attendance to determine relative importance and strategies for minimizing barriers to attendance, for example:
    - To what degree does location influence the likelihood of attendance?
    - How influential were the cooperating organizations in generating turnout?
    - What opportunities are there to leverage with local business meetings?
    - What are the scheduling issues? Identify preferences regarding time of day and day of the week.
- Test the receptivity of the small business market to alternative educational modes.

8.1.3 Course Description

This 2-hour course addresses energy-efficiency opportunities in the commercial sector, with a focus on helping customers identify applicable savings opportunities. The course is targeted to managers and owners of small- and medium-sized businesses and primarily addresses HVAC and lighting end uses. This course is intended to be a less technical offering as compared to other courses offered by SDG&E.

Topics covered in the seminar included:

- Improving energy cost management
- Options for reducing energy use
- Issues and options for lighting and HVAC applications
- Energy audits
- Developing an energy analysis work plan.

Seminar attendees were also provided information on SDG&E's rebate and incentive programs.

8.2 Methodology

Evaluation of this seminar began with interviews of SDG&E personnel, supplemented by a review of available program documents. Primary research activities undertaken included:

- Interviews of participating customers
- Surveys of eligible customers
- Interviews of local business organizations.

More detail on each of these tasks follows.

Phone interviews of 2003 participants. Ten of the 34 participants of the 2003 seminar were interviewed by telephone to examine the reasons for attending this seminar and to elicit recommendations for future seminars. This task examined such issues as whether participants learned of the program through utility marketing or through referrals from local Chambers of Commerce, what made them interested in this course, feedback on course content, and recommendations on marketing, venue, and possible co-sponsoring or partnering organizations. Respondents were randomly selected from the overall population of participants.

Phone survey of target population Telephone surveys were completed with 45 eligible small businesses that had not attended this seminar. This research investigated the following issues:

- Awareness of SDG&E energy efficiency seminars
- Reasons for non-attendance
- Level of interest in energy-efficiency seminars from SDG&E
- Key considerations affecting seminar participation
- Desired features of energy efficiency seminars
- Acceptable travel distance
- Scheduling preferences
- Options for scheduling seminar in conjunction with local trade shows
- Level of interest in other educational formats
- Sources of information relied upon for energy-related information
- Membership in business associations and trade groups
- Recommended methods of promoting seminar.

The sample frame consisted of a purchased list of small businesses in the service area. Respondents were screened on the basis of number of employees and building ownership or payment of utilities. Renters who do not pay their utilities were excluded from the sample population. In addition, respondents were screened out of this study if the business was part of a chain where energy-related decisions are made at a remote location.

The data analysis examined the effect of firm size on barriers to attendance.

Interviews of local business organizations. To develop further information on the small business market and possible promotional options, telephone interviews were completed with local economic development councils and chambers of commerce. The interviews explored their reasons for partnering with SDG&E (e.g., what value did they see in it for their members), perceived need for seminars of this type, perceptions of best market segments to target, recommended methods for promoting seminar to identified target markets, their perspectives on and experiences with the seminar (e.g., is there a way to increase value to members), recommendations with respect to topic coverage, and scheduling and recommendations for promoting the seminar to small businesses throughout the area.

Five interviews were completed with representatives from the following organizations:

- Chula Vista Chamber of Commerce
- National City Chamber of Commerce
- Otay Mesa Chamber of Commerce
- San Ysidro Chamber of Commerce
- South County Economic Development Council.

In each case, the respondent interviewed was the person most familiar with the seminar at the respective Chamber.

8.3 Findings from Internal Interviews

8.3.1 Program Implementation

Implementation of this course has involved partnerships with the South Counties Economic Development Council (SCEDC) for the 2003 seminar and with the Small Business Development & International Trade Center at Southwestern College for the 2004 seminar. The former involved six local chambers of commerce in the partnership, under the umbrella organization SCEDC. Both seminars have been directed at San Diego's Southern County Areas.

The seminars held in August 2003 and July 2004 experienced very different levels of turnout: The 2003 seminar, held at the Chula Vista Public library, had 34 attendees. The 2004 seminar, held at the college, had only five attendees. SDG&E was very pleased with the level of turnout at the 2003 seminar as well as with the good representation of Spanish-speaking businesses at that course. They were unpleasantly surprised by the difficulty of getting attendance at the 2004 seminar.

SDG&E management is aware of some of the barriers it faces in targeting a seminar to the small business market. Information already available to SDG&E suggested that the smaller staffs in this segment create attendance barriers for seminars. Customer feedback also indicated that the courses needed to be kept brief if possible. There was also concern

among management that some of the seminars might be competing for the same customers. A specific case in point mentioned was the seminars targeting the food sector might be pulling small restaurants away from this seminar.

8.3.2 Marketing

The primary marketing used for the August 2003 seminar was direct mail. Two mailing lists were used; one of selected SDG&E customers, the other provided by the South County EDC, and six South County chambers of commerce for a total of nearly 19,000 pieces mailed.[25] This mailing was supplemented by e-mail notification to members of the South County EDC and Chamber members. The SDG&E e-mail invite list was approximately 1,000 names; the size of the partner organizations lists is unknown.

Marketing for the July 2004 seminar included mailings, telephone recruiting, information on the website and handouts for distribution by SDG&E account reps and by the Small Business Development & International Trade Center at Southwestern College. Marketing activity levels for the second seminar were strong: 5,000 pieces mailed to the South Bay and East County areas; 1,700 businesses from the mailing list were called to recruit and, if possible, pre-register them for the seminar. This pre-registration effort was ineffective; only one of the pre-registered customers attended. Four out of the five attendees registered at the door.

Seminar information was also posted in multiple locations on the Internet: SDG&E website, SDG&E seminar website, Energy Efficiency Center website, and South County EDC and Chamber websites. All course offering are posted on the SDG&E website.

In our informal review of the SDG&E website, we found the content supporting seminars for the smaller business customers was top rate throughout. While we had no way of examining the website content from 2003, as of the fourth quarter 2004 the SDG&E website was found to be very easy to navigate and user friendly with respect to locating information for the small- and mid-size business customer. The section of the site directed to the small business customer included an easily spotted link to the section posting seminar information. This section with course information was, in turn, clear and comprehensive, providing course titles, descriptions, scheduling, locations, class availability, as well as information on the instructors' backgrounds and the intended target audience for each seminar. The site also included a contact name, e-mail address and phone and fax numbers for those customers wanting additional information. Registration options were also provided for either on-line registration or printing a registration form to mail or fax back to SDG&E. The same information could also be accessed by navigating through the energy-efficiency section of the website rather than the small business section.

[25] The respective chambers involved were Chula Vista, Coronado, Imperial Beach, National City, Otay Mesa, and San Ysidro.

8.3.3 Effectiveness in Addressing HTR Markets

In discussing the program goals with the program manager, we were told that goals for their overall ETS program included trying to provide workshops suited to a variety of market segments, with different workshops catering to the unique needs of different segments. This particular workshop is targeted to small- and medium-size businesses, customers who, on that basis alone, are considered hard to reach (HTR). It was reported that no quantified goals existed on this parameter, but that customer demographics were tracked to assess reach into the target market.

An internal document titled "Outline Analysis, South County EDC Energy Management Workshop" summarized the activities and outcomes of the August 2003 seminar. This document reports attendance of 34, with 29 being categorized as HTR. This seminar was targeted to "small businesses under 20 kW who lease space and employ less than 10 in an enterprise zone and predominantly Spanish-speaking community."

- **This seminar did draw HTR customers.** One-third of the attendees spoke languages other than English (primarily Spanish), 42% had 10 or fewer employees, and 42% leased their facility space.

8.3.4 Tracking of Participant Satisfaction

During PY2003, SDG&E gathered customer satisfaction information from seminar participants by means of a questionnaire distributed at the conclusion of the seminar. This questionnaire gathered the following information:

- Satisfaction with the seminar
- Satisfaction with the speaker
- Amount of material that was new to the participant
- Likelihood of changing energy efficiency at participant facility as a result of the seminar
- Primary language
- Number of employees
- Ownership of facility
- How participant learned of the seminar.

These questionnaires filled out by attendees of the August 15, 2003 seminar (n=33) indicate that the course was well received, presented information that was new to the participants, and was likely to yield improvements in the efficiency of facilities operated by attendees. The findings also indicated that this seminar achieved some successes in communicating to HTR segments of the market. Specific findings included:

- **Attendees were satisfied with the quality of this seminar.** Half of the participants (51.5%) gave the seminar the highest rating and almost three-quarters (72.7%) gave top ratings to the instructor. No attendees gave either the course or the instructor a negative rating.

- **The course material provided new information to the attendees.** Three quarters of the attendees (75.7%) indicated that at least half of the course material was new information for them. One-third of the attendees indicated that more then 75% of the course content was new information for them.

- **The information was persuasive and may lead to efficiency improvements at participant facilities.** Overall, nearly two-thirds of the attendees (63.6%) indicated that there was a greater than 50-50 chance that they would improve the efficiency at their facility in response to this seminar.

8.4 Findings from Business Organization Interviews

Telephone interviews were conducted with selected Chambers of Commerce and Economic Development Councils. These calls were used to gather feedback and to examine opportunities for co-sponsorship of this seminar in the future. Specific topics that the interviews covered included:

- Perspectives on the course and its value to their members
- Recommendations on marketing of seminars
- Partnership opportunities
- Recommendations on alternatives modes of efficiency education.

8.4.1 Outreach and Marketing

- **Chambers recommended that SDG&E continue to work with them in outreach and notification about upcoming seminars.** This was uniformly their first-mentioned and top-ranked recommendation for how to inform the small business community of future events. There was a willingness to work with SDG&E in this regard and to handle the communications through newsletters, distribution of fliers at monthly meetings, e-mail notices, etc.

- **Speaking at local meetings and having displays at local events were recommended promotional approaches.** Community events, business-sponsored events for the community, monthly meetings of the Chambers were all recommended as opportunities for connecting with the smaller business customers.

8.4.2 Course Content

- **The content of the seminar is felt to be too technical and sophisticated for the smaller business customer.** The course content of the 2003 course and a more recent course offering were felt to be better suited to either larger businesses or more sophisticated downtown San Diego firms. Two out of five respondents strongly felt that the material just wasn't suited for the small business audience. They urged SDG&E to revamp this course offering to better address the small business market segment. This issue warrants further investigation in future evaluations.

- **The presentation to the small business customer should focus more on choices that save money.** Monetary savings is the key message to be emphasized for this customer base. These organizations recommended a simple instructional approach that shows steps the customer can readily take without a great deal of engagement with the subject matter.

8.4.3 Other Approaches

- **Reaction was mixed with respect to alternative modes of disseminating information.** Some respondents felt that offering CDs or DVDs with energy-efficiency information was a good alternative for the small business market. One suggested coming to a monthly meeting as a featured speaker, giving a brief talk on energy efficiency and then offering such materials to the business owners in attendance. In contrast, one other respondent felt that taking a "technology" path would not work well in the South County area because this region has less access to technology than other regions nearby.

8.5 Participant Interview Findings

Telephone interviews were conducted with 10 attendees from the 2003 seminar. These calls were used to gather feedback on the seminar and to elicit recommendations for future seminars. Specific topics that the interviews covered included their reasons for attendance, strengths of the course, and recommendations for marketing the course in the future to the small business market.

8.5.1 Reasons for Attendance

Participants came to the seminar looking for information on new products and on how to reduce their energy expenses. The reasons given for attending this seminar tended to focus on a general interest in keeping abreast of newer technologies and seeking information on ways to cut costs. One respondent expressed a specific interest in lighting and another had not made the decision so could not elaborate.

Participants are selective in attending seminars and must believe that the course offers information of value to them. As one respondent put it, "Most workshops are a couple hours or longer. This is an issue for staffing. We only go when we believe it will be very beneficial."

8.5.2 Strengths of the Seminar

Lighting content and demonstrations were valued. Among participants who stated an opinion about course strengths, the feelings were that it was a good seminar that provided good information about lighting technologies. Unfortunately, half of the respondents did not recall any particular aspect that stood out as a strength of the seminar.

8.5.3 Marketing

There was no consensus on preferred notification methods. Respondents were split in their preferences for how course notifications should be made. While e-mail, fax, and

standard mail were all preferred by some, there were inevitably others who did not like these methods; no one communications vehicle was more popular than others.[26]

Having a presence at trade shows was viewed as an opportunity for more effective outreach as was partnering with local business associations. Recommendations tended to be trade specific, with realtors recommending real estate shows and the like. Two local Chambers of Commerce were also recommended; this option might provide broader reach across business types but would be more limited geographically.

Offering presentations that can be made at the customer's facility was also viewed as helpful. The convenience of having a rep bring the information directly to the employees in the shop was viewed as making it much easier for management to consider participating.

8.6 Target Audience Survey Findings

Telephone surveys of 45 eligible customers were used to develop information on awareness of SDG&E seminars, interest levels, barriers to participation, and recommendations for future educational efforts on energy-efficiency topics.

8.6.1 Overview of Respondents

The respondent population for this study was limited to firms with no more than 20 employees. Most respondent firms were smaller than this: 80% had 10 or fewer employees; 57.8% had five or fewer; 28.9% had only one or two employees.

Most of the respondents were renters who paid their own utility bills (71%); the remainder were owner occupants. All respondents represented firms that pay their own utility bills.

This research did not address non-English-speaking businesses. This limits the generalizability of the results to this market segment and suggests an area for further research in future evaluation work.

8.7 Awareness, Degree of Interest and Participation

- **Utilization of available energy-efficiency seminars is low.** Roughly half, 53.3%, of respondents were aware that SDG&E offers seminars on energy efficiency yet only 2.2% reported that anyone from their company had attended any of these seminars.

[26] The small sample size makes statistical comparisons impractical, but a review of the results did not identify any single preferred mode of notification.

Table 8.1: Awareness and Interest in SDG&E Seminars

Awareness of SDG&E classes and workshops	by Firm Size		
	Under 5 employees (n=24)	**5+ employees** (n=21)	**Total** (n=45)
Aware and have attended workshops	0.0%	4.8%	2.2%
Aware but have not attended	54.2%	47.6%	51.1%
Unaware	45.8%	47.6%	46.6%

[Percentages do not sum down column to 100% due to rounding error]

- **Interest levels are very low.** Consistent with the data above, small business owners as a group expressed weak interest in energy-efficiency seminars. A startling 51% reported no interest at all in attending seminars on controlling energy costs. Other indicators suggest that this portion of the market is more uninterested than resistant; still, low interest levels will present a key challenge. The results of subsequent questioning does suggest that there is a hard-core uninterested segment of close to 18% of the market that cannot be induced to take any interest in energy-efficiency seminars.

Table 8.2: Interest in SDG&E Seminars

A3.1 Consider for a moment that you receive an announcement that San Diego Gas and Electric is offering a new workshop on controlling energy costs. On a scale of 1 to 5, where 1 is "not interested at all' and 5 is 'very interested,' how interested would you be ?

Interest in workshop	by Firm Size		
	Under 5 employees (n=24)	**5+ employees** (n=21)	**Total** (n=45)
1 Not interested at all	58.3%	42.9%	51.1%
2	16.7%	23.8%	20.0%
3 Neutral	8.3%	0.0%	4.4%
4	4.2%	19.0%	11.1%
5 Very interested	12.5%	14.3%	13.3%

[Percentages do not sum down column to 100% due to rounding error]

- **A key barrier to past attendance has been scheduling conflicts.** Half of all aware nonparticipants reported that this was the factor that prevented their participation in the seminars that they had known about. Another 10% reported that they could not leave their business to attend a seminar.

- **Other factors are potentially of equal influence in shaping the attendance decision.** Among these are proximity, length of the seminar, and the perceived relevance of the course information. Table 8.3 summarizes these findings.

Table 8.3: Considerations Affecting Attendance Decisions

Which of the following considerations would be of particular importance in determining whether or not you would go to such a seminar? [Multiple responses accepted]

Decision Factor	Importance of Factor by Firm Size		
	Under 5 employees (n=24)	5+ employees (n=21)	Total (n=45)
Length of the seminar	25.0%	23.8%	24.4%
Distance to seminar	16.6%	33.3%	24.4%
Relevance of the information	12.5%	33.3%	22.2%
When seminar is held	12.5%	28.6%	20.0%
Seminar cost	4.2%	28.6%	15.5%
Other	4.2%	4.8%	4.4%

Additional information on these issues was developed in further questioning. These results are discussed in the section below. The findings from the follow-up questions provide important details about scheduling and location barriers, which are chronic impediments to attendance for the small business sector.

8.7.1 Distance and Scheduling Issues

- **Distance is an important factor in attendance decisions, particularly for businesses with fewer than five employees.** Overall, 20% of small business customers report they are not willing to travel any distance at all for a seminar on controlling energy costs. (See Table 8.4.) Nearly all of this response originates with the smallest firms (eight of nine who reported they would not travel to a seminar). Overall, only one-third of small businesses will travel over five miles to attend a seminar; the majority of these are firms with over five employees.

Table 8.4 Effect of Firm Size on Sensitivity to Distance and Location Issues

Distance willing to travel	Willingness to Travel by Firm Size		
	Under 5 employees (n=24)	5+ employees (n=21)	Total (n=45)
Unwilling to travel	33.3%	4.8%	20.0%
Up to 5 miles	20.8%	23.8%	22.2%
Over five miles	46.0%	71.4%	57.8%

[Percentages do not sum down columns to 100% due to rounding error]

- **Short seminars are needed to reach the small business market segment.** When asked to identify acceptable course lengths, approximately two-thirds of all respondents indicated a duration of one to two hours is best. This was consistent across business of different sizes, although the smallest businesses were more likely to indicate that seminars should last no longer than one hour (28.6% of firms under five employees vs. 10.0% of employees with more employees).

- **Seasonal factors did not appear to be strongly influential in customer receptivity to seminar attendance.** Summer and winter were reported to be modestly better than spring or fall (42% vs. 36% reporting as good times to schedule). It is possible that the aggregate data are masking seasonal factors of importance such as the Christmas retail season.

- **Midweek is best for scheduling seminars.** Tuesdays, Wednesdays, and Thursdays were the three preferred days of the week for seminars as shown in Table 8.5. The top time preferences were: Wednesday evening, Tuesday evening, Thursday evening, anytime Wednesday, Monday morning, anytime Tuesday, and anytime Thursday.

Table 8.5: Scheduling Preferences

[more than one response accepted]

Time of Day	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Breakfast	8.9%	8.9%	11.1%	8.9%	0.0%	6.7%	4.4%
Morning	13.4%	8.9%	8.9%	8.9%	2.2%	8.9%	4.4%
Lunch	6.7%	8.9%	11.1%	8.9%	0.0%	6.7%	2.2%
Afternoon	4.4%	8.9%	11.1%	11.1%	4.4%	4.4%	6.7%
Dinner	4.4%	6.7%	11.1%	6.7%	0.0%	2.2%	2.2%
Evening	6.7%	13.4%	15.6%	13.4%	0.0%	2.2%	2.2%

8.7.2 Information Delivery

- **Many small business customers do not seek out information on energy efficiency.** One-third of this market segment reported that they do not use any sources of information to keep informed about energy efficiency or new technologies, generally.

- **Offering the seminar at a conference or trade show may boost attendance.** Over 60% of the respondents to this question indicated that if they were at a trade show, they would be more likely to attend an SDG&E seminar there as compared to otherwise taking time out of their workweek. However, as discussed below, we were unable to identify any particular venue that might accomplish this as conference attendance patterns are highly reflective of specific business niches.

- **Creating links from other websites may be an avenue for increasing customer access to energy-efficiency information.** Small business customers report that SDG&E is their top source for information on energy efficiency, followed by information on the Internet (20% and 18%, respectively). No other single source was reported to be used for this purpose by a substantial proportion of small business respondents.

- **No individual publication, website, trade show, or business association appears to have significant reach into the small business sector.** Information seeking relies upon a wide array of source materials, with no single business-related source appearing to get broad use. Instead, source use tends to reflect the specific type of business of relevance. This extremely fragmented information market suggests that it will be very difficult to find any print media, website, or show venue that will provide effective communications channels, unless SDG&E decides upon a narrowly targeted marketing effort for specific seminars.

- **Brochures are a preferred means of receiving notices of future seminars.** One-third of respondents suggested brochures would be the best way to inform them of future course offerings, 20% suggested placing information in the monthly bill, and 13% suggested e-mail. (See Table 8.6.)

Table 8.6: Preferred Types of Notification

[More than one response accepted]

Notification Method	Share preferring
Brochures	33.3%
Information in bill	20.0%
E-mail	13.3%
Internet	4.4%
Trade magazine	2.2%
Other	33.3%

- **There is a substantial level of interest in both electronic and printed material as an alternative to seminars.** Based upon the information from this survey, it appears that a substantial portion of the small business segment is interested in non-seminar methods of getting information from SDG&E, with DVDs and CDs being of greatest interest. (See Table 8.7.)

- **Electronic media present an interesting opportunity for delivering information to the most challenging small business segment, the firms with the smallest staffs.** Interest levels in electronic formats is related with the inability to attend seminars: among the smallest customers, where there is less ability or inclination to attend seminar, there is greater interest in DVDs and CDs.

Table 8.7: Effect of Firm Size on Information Distribution Preferences

[More than one response accepted]

Information distribution option	Preferences regarding information distribution		
	Under 5 employees (n=24)	5+ employees (n=21)	Total (n=45)
DVD, CD, computer disk	50.0%	28.6%	40.0%
Manual or brochure	20.8%	28.6%	24.4%
On-line tutorial	20.8%	20.8%	22.2%
Videotape	4.2%	9.5%	6.6%
Internet	0%	9.5%	4.4%
Other	8.3%	14.2%	11.1%

8.7.3 Suggested Topics

- **Customers seek information on how to save money by cutting energy use.** The dominant response when asked what subject they would like to see addressed in future seminars was this fundamental issue – identify ways they can save by reducing energy use. Most often this was articulated as a general request, as in "any information on ways we can cut our costs." The other major request was for energy savings tips for specific end uses, with lighting and heating and cooling being most frequently mentioned.

- **A smaller percentage of customers seek information on particular end uses or technologies.** There is a minority segment that comes to seminars looking for information specific to a particular end use (often lighting, but also including heating and cooling) or on a technology, such as solar options.

8.8 Recommendations

Based upon the findings from this evaluation research, the following recommendations are offered to the small business seminar.

8.8.1 Marketing

Marketing strategies and outreach for educational services for the small business sector must reflect the difficulty of attracting interest in seminar attendance. Awareness building alone will not generate substantial interest in seminar attendance, as this fails to address a key barrier to participation. Interest levels are very low, information seeking on efficiency issues is rare, and willingness to travel to a seminar is limited. The other primary barrier to attendance is a matter of scheduling conflicts, driven in part by the critical need for small business staff to be on the job. Challenges for this seminar are to find ways to deliver information that is suited to a market that has low motivation overall, but may contain pockets of opportunity.

Try a trial run of target marketing to this seminar to customers with expressed needs to reduce energy costs. One strategy that has worked with some success for other utilities is to target energy efficiency services to customers with high bill complaints. It is recommended that SDG&E pilot test using information (leads) from the Customer Service Department to target customers already concerned about their energy costs.

8.8.2 Seminar Delivery

To lessen scheduling difficulties, courses for small business should be kept to two hours or less and offered within five miles of the business audience. These findings suggest that something other than a formal seminar may be better suited to the small business market. More informal, short presentations with leave-behind materials might be more appropriate. These could either function as stand-alone events or serve as a tool for recruiting small businesses to more detailed seminars.

Alternative educational approaches should be developed to supplement the reach of the seminars. Scheduling barriers are a relatively intractable characteristic of the small business market. To increase the effectiveness of efficiency education in this segment, SDG&E should diversify its educational methods.

The concept of using CDs or DVDs looks very promising, especially as a means of delivering information to the smallest businesses. This research uncovered a high level of interest in electronic and print materials on energy efficiency as an alternative to seminars, with DVDs and CDs having strong appeal to businesses with fewer than five employees. This finding is particularly important given the context of the difficulty of addressing seminar attendance barriers for these very small firms.

The approach of seeking to partner with local business groups is sound. The small business market expressed receptivity to attending seminars if they were held in conjunction with a trade show or other meeting where the customer was already in attendance.

Success in partnering with local business organizations will be linked to the effectiveness of the partnering organization in turning out an audience. Where SDG&E has found an effective partner for co-sponsoring these seminars, it would be worthwhile to nurture the relationship. Such partners provide marketing leverage that is difficult to replicate. One consideration for ongoing partnerships will be how to interest members in attending more than one session on energy-related subjects. Attention must be given to how to keep the presentation fresh and appealing.

New partner organizations should be selected in a strategic fashion. In seeking out new organizations to partner with, it appears that any particular partner will have finite reach, either geographically or with respect to market segment. (Consider, for example, the local chambers of commerce vs. trade groups for restaurants or automotive outlets.) It might make sense to consider recruiting a set of partner organizations, with strategic consideration given to prioritizing which markets are to be targeted.

9 Best Practices

9.1 Introduction

9.1.1 Background

The six centers provide training and education to adults on energy-related matters. Many of the course offerings focus on instructing attendees about technologies or practices that will help them save energy. The focus of most adult learning (energy or otherwise) is on changing attitudes and behavior, and there is a body of knowledge that addresses principles in adult education that have proven effective.

We conducted an investigation of successful adult education institutions and practices with an eye towards those institutions attempting to affect energy savings. We include in this study a look outside of the California Energy Centers to identify Best Practices in implementing, marketing and evaluating education and training courses. We also wanted to explore the issues associated with adult learning; considering issues such as course content, teaching styles, and in-class versus distance learning.

This chapter is not meant to be a comprehensive assessment of adult education issues. Instead, the results of this study present identify some best practices as a way for the centers to assess their current courses. We do not mean to suggest that all of the ideas discussed here are absent from the current center programs.

9.1.2 Best Practices Objectives

The objective of this exercise was to identify some best practices in energy education specifically and adult learning in general. These best practices could then be used to inform both the case study recommendations and general approaches that the centers could use to improve the marketing, delivery and evaluation of the courses they offer.

9.1.3 Methodology

We conducted in-depth interviews with five organizations responsible for adult education and training. We selected the five interview respondents from two types of educational organizations: those focused on energy or technical training, and organizations that specialize in training, regardless of topic. We selected organizations generally regarded as, or identified by industry experts, as leaders in the field of providing either adult education or energy training. Table 9.1 below identifies the organizations included in the Best Practices study.

Table 9.1: Organizations Interviewed for Education and Training Best Practices Research

Organization	
Energy Center of Wisconsin	Offer energy education and training to contractors, energy professionals and some end-user groups.
OCM BOCES (New York)	Offer contractor training and certification classes funded by NYSERDA and the Building Performance Institute.
Northwest Energy Efficiency Council	Developed and manage Building Operator Certification Course. Offer BOC in California.
Laurel and Associates	Consultation offering support of adult education programs including training of trainers.
Bob Pike Group	Consultation for wide range of training and certification courses.

9.1.4 Section Layout

The remainder of this section is provided in two subsections. Subsection 9.2 begins with more detail on the respondents. Next, we provide interview results in four areas – marketing, implementation, evaluation, and in-class versus distance learned. Finally, in subsection 9.3 we summarize the findings.

9.2 Interview Results

9.2.1 Respondent Characteristics

We completed interviews with representatives from organizations providing energy education and two organizations that provide adult education, not necessarily energy related. The three organizations that provide training specifically on energy efficiency, often in support of utility or public benefits programs represented in these interviews are:

The Energy Center of Wisconsin (ECW). This private nonprofit organization provides research, information, and education on energy issues to businesses, professionals, and policymakers. In the past five years they have offered more than 360 training programs to 14,600 participants. Participants are primarily contractors, building and maintenance staff, architects and engineers. The center has twice won the Award for Excellence in Education from the American Institute for Architects Continuing Education System.

OCM BOCES – Odondaga, Cortland, Madison – Board of Cooperative Education. OCM BOCES develops and contractor certification training across New York State for the New York State Energy Research and Development Authority – the provider of public benefits programs in New York. They also develop and provide certification training for the Building Performance Institute.

Northwest Energy Efficiency Council (NEEC). NEEC developed, licenses, and offers Building Operator Certification (BOC) training. BOC is a national certification for facilities operations and maintenance staff, designed to improve the energy efficiency of commercial buildings. Operators earn certification by attending a total of 56 hours of training. The course series consists of classroom training, project assignments completed at the facility, and in-class exams administered at the end of each of eight topics.

Laurel and Associates, Ltd. Laurel and Associates is a 20-year-old firm located in Madison, Wisconsin and headed by Deborah Spring Laurel. She has designed and presented hundreds of different skill-building workshops on various topics, all of which have been tailored to meet the specific needs of her clients. She was involved in the design of the training programs for: Ventilation Basics, Drainage Basics, Practical Energy Management, Integrating High Performance, the 8-day Wisconsin ENERGY STAR Homes Training Consultant training, and the two different levels of training for the National Compressed Air Challenge. She also designed and presented the train-the trainer programs associated with these programs. In 1992, she was selected the Wisconsin Trainer of the Year by the Small Business Development Center. She is currently one of three trainers certified to conduct the national 3-day Training Certificate Program for the American Society of Training and Development.

The Bob Pike Group. The Bob Pike Group is a private company located in Minneapolis, Minnesota. The Bob Pike Group, formerly Creative Training Techniques International, Inc. (CTTI), has been training trainers for over 30 years. They have developed seminars, curricula, and consulting services to provide participant-centered techniques to improve learning retention and obtain desired training results. The Bob Pike Group has participated in the BOC training in California and across the U.S.

The limited number of interviews that we conducted as part of this study resulted in spotty coverage of some of the issues. We found that the selected respondents could speak to only some of the issues. We used discretion in identifying the best practices among the various responses we received to our queries. Finally, we recognize that the Energy Centers themselves may be limited by budget or internal policies in their ability to employ best practices.

9.2.2 Marketing

Media

The energy education respondents varied in the media they used to promote their courses. Two used a similar initial approach of marketing through existing mailing lists. The ECW maintains a mailing list of past attendees to ECW trainings and often supplements this list with specific lists provided by a program implementer or other stakeholder in the class. ECW's mailing list includes 20 to 30 segments so that the mailing goes to the appropriate target audience for a class. NEEC uses mailing lists from various associations whose members are likely attendees of the BOC course.

Both of these respondents discussed the importance of developing "robust relationship with trade associations." The robust relationship would be characterized as an ongoing business "partnerships" where the trade association sees the benefits of the course to their members and is willing to promote the workshops through existing channels. The relationship must benefit both sides and involves the entity offering the educational course understanding and helping to meet the needs of the trade organization members.

The partnership is developed through personal and ongoing relationships between representatives of both organizations. It may also mean bringing the training to existing gatherings of trade organization members. One respondent pointed out that the educational entity should be actively engaged in the organizations. For example, they should try to be put on the agenda of monthly meetings in order to make presentations, purchase exhibit space at conferences, and make presentations at conferences where opportunities exist. This creates exposure for the education center and establishes them as both a contributor to the organization and as a source of information.

One respondent noted that e-mail is very cost effective (for business customers) for getting to people who are already your customers (past attendees). It is, however, much less effective for people unfamiliar with the organization or product. This supports the idea of using trade organizations to help market, as the members recognize and trust their own trade groups. NEEC noted that while initially their e-mail approach was effective (and it did include mailings to members of trade organizations), as they have gained inroads into the market it has been less effective in drawing people to their informational meetings.

Respondents identified two characteristics of a good e-mail list. First, the list should be segmented so that mailings are limited to items that may be of interest to that person. You do not want to send too many e-mails to someone about courses for which they have no interest, as you risk being seen as spam that is deleted before it is read. The segmented list also allows you to tailor the message to that target audience. Second, the list should be regularly cleaned to remove bad addresses (from people switching jobs, for example) and duplicates.

Message

All energy educators talked about how the message has to be **"what is of value to the target market."** One respondent noted that, "Energy savings is not the value proposition." Respondents noted different messages depending upon the course content and the audience. For example, a course that certifies contractors to participate in an energy-efficiency program leads with, "Stay ahead of the competition . . .," mentions "business profit and growth," and talks about helping customers "solve energy-related problems and increasing comfort and safety." There is no mention of energy savings.

One respondent noted different types of concerns among different professions that can be used to promote courses on energy efficiency. She noted that for residential contractors a

primary business concern is to reduce callbacks, engineers are interested in building performance, and architects are interested in design-based, more abstract concepts.

Respondents noted reasons that people will attend a training session. These included:

- To obtain certification or credits (AIA) or to get credits they need for license (electricians)
- To learn about regulatory requirements.
- For recognition and respect among colleagues (important for trades and maintenance folks).

Two respondents (and a respondent in one of the case studies) suggested charging for classes as a way to increase participation. Charging for a class communicates that the course has value. It also reduces the number of registrants who do not actually attend. One respondent noted that the money generated from charging for classes resulted in an overall budget increase, providing money to do "other things." In this instance, it provided some freedom from the constraints of the base funding to test out new approaches.

Two respondents noted that utilities often offer training in isolation from other activities. The sense is that the trainings and the staff involved with the trainings are not integrated with other utility operations. They noted, however, that the more integrated the programs are with other utility "products," the more successful they will be. The education centers will benefit from relationships that others in the utility have, the utility programs and products will benefit from being highlighted in trainings, and participants will see additional value in the courses.

9.2.3 Implementation

Instructional Design Issues

The adult education consultants we talked to were clear that the lecture type of workshops generally provided by the centers are not the best approach, particularly to motivate energy saving actions. Both consultants emphasize that educators must recognize the process by which adults learn and use that understanding in designing adult education. One consultant uses Benjamin Bloom's "Building Blocks of Learning," which includes six stages: knowledge, comprehension, application, analysis, synthesis, and evaluation. There are other similar models of learning with different names and different numbers of stages, but all agree that learning is a process. Based on that understanding, one of the trainers implores her clients to also appreciate that training is a process and not an event. A relevant quotation from the other consultant defines learning such that "learning has not taken place until behavior has changed."

According to the practices discussed by these respondents, we see six elements that each center and each center's courses should embrace. The key elements of a good workshop include:

- Identification of clear learner objectives (what the student will get out of the course) that match the benefits desired by attendees
- Courses with limited content (do not try to do too much within a single class), and prioritize materials so that the more important material is first, last and reinforced
- Active participation by workshop attendees, which leads to higher learner retention
- Opportunities within the workshop to review and reinforce lessons (such as activities and interaction)
- Opportunities built into the training such as training materials, or follow-up activities that lead to post-training reinforcement of material
- Training of the course instructors on instructional design and other adult learning techniques (often called "Train the Trainer" classes).

We discuss these in more detail below.

Several of the respondents pointed to the need to have clear objectives of what you are trying to produce for each course. The objectives should be focused on what the learner will change as a result of the course – behavior, attitude, or practices. In a 4-hour course, they discussed a limited number of objectives – perhaps one to three objectives for behavioral change. The objectives, to the extent possible, should be measurable so that you can test the success of the course in meeting the objectives.

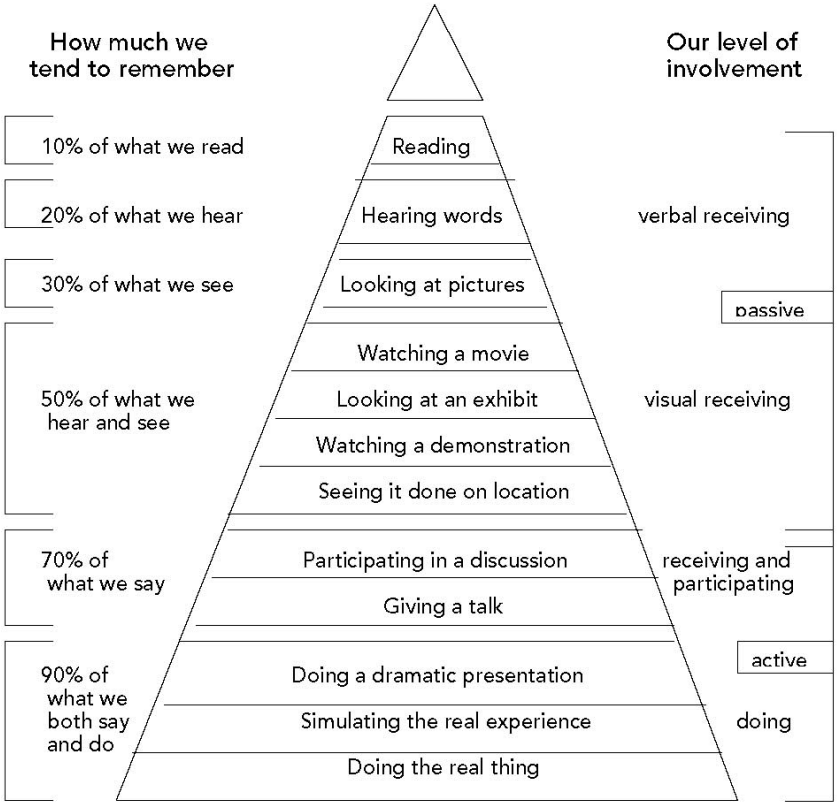
In the same light, the course should not try to cram too much material into a session. One consultant expressed the idea of energy management, not as we understand it, but as wisely conserving the energy level of course attendees. Adults can only process so much before all the material including the objectives is lost. This caution also speaks to the need for frequent changes in approach. If lectures are needed, they should be short and followed by an active activity that reinforces the message of the lecture portion. Time management also refers to prioritizing the material so that the most important material is covered during the first half hour and reinforced at the very end. Other important material should be presented after breaks and not right before them.

Several of the experts pointed out the need to move from passive learning to actively engaging the students in the learning. As one respondent pointed out, "Lecturing is easy, but the instructor needs to engage the student in the learning." One of the trainers pointed out the "Cone of Experience and Learning" by Edgar Dale, shown below, which correlates remembering with level of activity. As shown Figure 9.1, passive activities result in low levels of remembering. The activities should take into account the type of learner. Engineers may prefer problem-solving activities that require a calculator. Other student groups may be more extroverted and prefer interactive activities.

Several respondents emphasized that each attendee has his or her own learning style. Recognition of this leads good instructors to use various learning approaches. Several of the trainers interviewed employ a lot of peer-to-peer interaction so that attendees get a chance to use the material and present it. As the "Cone of Learning" indicates, it is at the teaching level that the greatest retention is gained. One respondent pointed out that

regardless of the group, all courses should have an opportunity for students to interact. "Everyone in *there [the class]* has experience in the field, and they can learn from each other." This respondent discussed this interaction as something that increased the value of the courses to the students. Another respondent noted that the evaluations filled out by students say that the opportunity to network in the classes is important.

Figure 9.1: Edgar Dale's Cone of Learning [27]



Most people need time to absorb material and to effectively sleep on it before it is learned. Classroom educators understand this and assign homework and cycle back through concepts so that students are repeatedly exposed to a concept. One-day seminars do not have the luxury of letting people sleep on it and then returning to concept. Adult education, therefore, needs to build into the materials ways by which the attendee cycles back through the material. This can involve a well-structured set of materials that the attendee can refer back to, follow-up assignments that the attendee should do when they return to the office, and/or access to the instructor to help with issues that arise when the attendee first tries to put the new material into practice.

[27] Adapted from Dale, E., *Audio-visual Methods in Teaching*. New York, The Dryden Press 1946

Four of the five respondents emphasized the importance of training the trainers. They point out that many courses offered by the Energy Centers are technical in nature. The centers use subject matter experts to offer the training because these experts have both the technical knowledge and the credibility with the audience. A challenge to training these instructors, however, is getting them to accept that they can benefit from this training. They are comfortable with straight presentation of the materials and can be resistant to developing or engaging in group activities or exercises.

Two of the respondents who discussed the importance of train-the-trainer courses to teach subject matter experts the skills necessary to maximize learning had offered train-the-trainer sessions; one with mixed success and the other with overwhelming success. (Both respondents measured success by how thoroughly the trainers embraced the concepts and used them in later classes). The difference in success may be a function of geography or of the entity that offered the training. Both respondents with trainer training said that instruction was much improved among the trainers who embraced the training concepts.

Two of the respondents offer training to instructors and believe that these result in better instructors and better designed courses or workshops. Each discussed trainer workshops that involve four days of participatory involvement that result in a redesigned or new workshop for each instructor. During the workshop, attendees work to develop learning activities and practice giving those activities. The methods used in these workshops are the same ones that the trainers of trainers is hoping to see used by the student trainers in the courses they develop through the workshop. At least one of the trainers has developed a 2-day workshop that teaches the trainers the key elements for a good workshop and instructional design, without focusing on the development of a specific course.

One respondent finds that the more successful train-the-trainer experiences have the support of the management. Accordingly, they try to first meet with the management of an organization before providing training. It is their recommendation that a meeting be held with each center director, individually or collectively, to help define the objectives of the training, needs of the organizations, and particular strategies for the training.

Finally, one respondent believes that no trainee should leave a training session without having developed a clear action plan. Another respondent discussed how this was very important for certain trainings that were focused on behavioral change. Development of the plan increases the likelihood that the course will lead to action. It provides a test platform for the attendee to test the concepts presented and move from passive listening to active absorption of materials. It also gives the attendee help in moving what is learned in the classroom into their work environment.

9.2.4 Evaluation

All implementing respondents report having evaluations tied to each course. Two of the energy education providers have in-class forms that are filled out by attendees at the end of the course. The third implementer does a pre- and post-workshop self assessment of topic knowledge. This provider then conducts a follow-up survey with respondents (but

has a low response rate). The post course evaluations focus on satisfaction with the course – content, materials and instruction.

One organization also has outside research firms conduct evaluations of its classes. These evaluations go beyond satisfaction, to look at what the participants have done as a result of the course and how much energy has been saved. Another organization is also conducting follow-up on some of its courses designed to result in behavioral change to identify actions and energy savings. This organization uses internal evaluation resources that are separate from the education function.

Two organizations have each used a similar evaluation form over time. The standard approach to the evaluation allows them to compare across classes (on basic questions like overall rating, would you recommend to a colleague, etc.), to compare the same course over time, and to compare instructors. They have used the information to provide feedback to instructors and identify the best instructors. One organization has used the evaluation report compiled annually on the results of its workshops as evidence of the quality of its offerings to win awards from AIA.

The two outside educators reinforced the value of evaluation. One has a theme that evaluation should occur early and often. Waiting until the end of a workshop to get feedback is too late to affect the changes needed by the attendees.

9.2.5 In-Class vs. Distance Learning

None of the three energy respondents that offer energy education courses have developed or used an Internet-based (distance learning approach) for any course material. They were willing to comment briefly on this approach.

The energy educators all acknowledged that there is a “lot of interest” in distance learning but noted that this interest is not from the students. Instead, organizations offering training, or those funding it, are interested in pursuing it because they perceive it as less expensive. At least one of the respondents pointed out that it was unlikely to be less expensive, because the development costs may be higher, and the costs for implementing the class may not be sufficiently low enough to justify the up-front costs.

Energy educators also pointed out other potential pitfalls of distance learning. First, the opportunity to interact and learn from other students is lost. Second, the opportunity for the students to see, touch, or use equipment covered in the class is lost. As one respondent said, “contractors as a group would not do well with it (distance learning).” She went on the say that they would miss the connections with people and the hands-on and problem-solving activities. Third, students must be highly motivated, good readers, and disciplined to complete and benefit from on-line instruction. Finally, the students must have Internet (or at a minimum computer) access and a minimal level or expertise in using computers.

The consensus is that e-learning can be a good follow-up to other training or a helpful part of a blended training experience when asynchronous learning is advantageous. One

respondent's group does use the Internet to support learning after the courses are offered. They provide attendees virtual case studies and password access to documents that support program lessons. They feel this adds value to the class. The Pacific Energy Center's Tool Lending Library's website and support materials are another good example of the use of the Internet as part of a blended learning experience.

9.3 Summary of Best Practices

In this section we summarize the findings from the Best Practice interviews. Each Best Practice is written as a recommendation.

Marketing

- Segment the market for both marketing message content and for targeting the appropriate recipient.
- Market with a message showing how this course provides something of value to the target market.
- Establish strong relationships with professional and trade organization.
- Charge for courses to demonstrate their value.
- Offer certification or professional license credits whenever possible.
- Tie course offerings to other utility activities and programs, where possible.

Implementation

- Identify clear "learner outcomes" for each course.
- Balance lecture with activities and exercises.
- Limit the materials presented in class to focus on the two or three outcomes identified. Use other materials and post-training activities to fill in other details and reinforce what was presented.
- Segment the market for course content.
- Provide activities that are the appropriate style for the specific attendees (e.g., fewer group activities for engineers than for salespeople).
- Train the trainers. Provide instructional design training to course instructors.

Evaluation

- Conduct evaluations that go beyond measuring satisfaction.
- Use evaluations to identify strengths and weaknesses of instructors.
- Provide feedback to instructors from the course evaluations.

10 Review of Center Evaluation Forms

10.1 Introduction

Each of the California Energy Centers uses a post-class evaluation form to determine participant satisfaction and to capture other participant information. These short evaluation forms offer an opportunity within each Energy Center to capture information to improve course marketing and delivery. They also offer an opportunity to make comparisons across centers on participant satisfaction and characteristics.

In this section we review the evaluation forms to identify opportunities for consistency and to make recommendations to increase the usefulness of the evaluation forms.

10.2 Findings

We reviewed example evaluation forms from 2003 – in all but one case[28] the form was that used to evaluate the courses covered in the case studies. We identified 12 topic areas that are covered in two or more of the evaluation forms. Table 10.1 shows the topics that are covered.

As Table 10.1 shows there is limited consistency in topics that are covered. All course evaluations ask questions related to overall satisfaction with the course and with the instructor. These questions, however, are not consistent in either wording or scaling of responses.

Table 10.2 shows the variation in question wording and scales for the satisfaction question. The questions are very similar, but not exact matches. The response scales are also problematic for comparative purposes in that they use different scales. Most centers use a 5-point scale, one uses a 10-point scale at times, and another uses a 7-point scale. We do not have a specific recommendation regarding which scale should be used, but do think it would be advantageous for the centers to use consistent question wording and scales.

[28] For CTAC we used the evaluation form for "Successful Merchandising with Efficient Lighting," which was the original Case Study subject before CTAC switched it to Hard-to-Reach customers.

Table 10.1: Course Evaluation Forms

Items Covered	ETC	PEC	AGTAC	CTAC	ERC	SDG&E	Number of Center Evaluations that Cover the Topic
Hard to Reach				X	X	X (6-10)	3
Source of Course Information (Marketing)					X	open-ended	2
Overall Satisfaction	X	X	X	X	X	X	6
Content – useful or appropriate	X	X	X	X			4
Instructor	X	X	X	X	X	X	6
Materials		X	X (combined w/content)	X (combined w/content)	X		4
Facility			X	X			2
Type of Business	open-ended		X	X			2
Length of the course	X				X		2
Self-reported performance before and after course	X	X					2
Time spent performing task requiring the skill	X	X					2

Table 10.2: Course Satisfaction Questions

PGE-ETC	Please rate your overall satisfaction with this course/workshop.	Five-point scale excellent, very good, good, fair, poor.
PGE-PEC	Overall impression of the course.	Five-point scale – poor to excellent.
AGTAC	Overall quality of program.	Five-point scale excellent, above average, average, below average, poor.
CTAC	Overall quality of program.	Five-point scale excellent, above average, average, below average, poor.
ERC	The overall quality of the seminar.	Five-point scale* excellent, above average, average, below average, poor.
SDG&E	Overall, how satisfied were you with the seminar.	Seven-point scale Very satisfied to very dissatisfied.

*Other seminars at ERC use a 10-point scale for this and other questions.

We found some items on the evaluation forms to be unrelated to the specific course or to be unlikely to result in changes. For example, if a course is offered within one of the utility Energy Centers, satisfaction with the "facility" is unlikely to result in changes to the facility where the course is offered. If dissatisfied with the facility was grave enough so that participants did not recommend the seminar, this would show up in the overall satisfaction ratings. Questions related to the food and beverages may be taking up valuable space on the form.

The evaluation forms are inconsistent within a utility across centers and sometimes inconsistent within a center. For example, SCG ERC uses more than one evaluation form with different scales. One of the forms does not ask, "How did you hear about us?" or opinions about the speaker or include three open-ended questions that other forms include.

10.3 Summary and Recommendations

Our review of the course evaluation identified opportunities for increasing consistency in several areas. We think that the evaluation forms would provide substantially more value if they could be used not only to evaluate a single course, but also to compare across courses, across time and across centers. In order to do these cross comparisons the centers must agree to a minimum number of consistent evaluation questions and scales that are used:

- Within an energy center
- Across Energy Centers operated by the same utility (PG&E, Sempra, and SCE each operate two Energy Centers)
- Across all Energy Centers.

We recognize that there may be important course specific questions and so we are recommending that only a core set of questions be included across the courses and centers, with the remainder of the questions tailored to the center, the course, or a particular issue of interest at the time of the course offering.

Given the limitations of a one-page evaluation form, the general nature of the questions will serve only to point to problem areas (if there are any). They are unlikely to provide sufficient information with which to understand the details of the problem and address them.

The following core items should be covered on each evaluation form. We recommend that the utilities make efforts to include the following items and to standardize the question wording and response scales so that comparisons over time and across centers are possible.

Determining from what sources the participant learned about the course. The evaluation form is an easy place to determine from what sources participants heard about the course. This information can be used to identify the most effective marketing activities, whether different target participants hear about the courses from different sources and to see how effective new approaches to marketing are.

Overall satisfaction with the course. This is included in all of the evaluation forms, but is not standardized in wording or in response categories. This is the simplest type of question to ask and also one that is likely to result in positive responses. Still, it is an important indicator of how well as class is received if the results are compared across classes or over time. In other words, most respondents are likely to report high satisfaction with a course, so if a course has a lower than usual level of satisfaction (even if it is generally positive), the center should attempt to identify any potential problems with the course.

Satisfaction with the instructor. This is included in all of the evaluation forms, but is not standardized in wording or response categories. Good instructors – knowledgeable and engaging – are essential to the success of any course. The evaluation form can be used to get a sense of how well the participants received the instructors. We recommend a minimum of two questions for each instructor – one addressing how knowledgeable they were perceived by students, the other on how well they communicated the information. The most knowledgeable instructor is ineffective if unable to communicate well to participants.

Rating of course content. Include a question on the evaluation form that addresses the content of the course. As the centers are held more accountable for energy savings

these questions will be important in determining those courses that are most likely to result in behavioral change among the respondents. These questions should address whether the information was at the appropriate level (or the appropriate type for the participant) and especially, how likely the participant is to do something different as a result of the course.

Focus evaluation forms on rating of course related items by including one open-ended "catch-all" question. We recommend removing from the evaluation questions that do not specifically address the course or respondents characteristics. In other words, remove questions related to general attitudes about energy efficiency and ratings of the food or facilities. Include a question such as "Do you have any other comments?" to capture any problems (or successes) not included in the standard questions, such as problems with the facility or food. Although questions related to general attitudes about energy efficiency are interesting, they do not assist in evaluating the course. The centers are unlikely to track repeat attendee responses over time[29], and any changes in attendee attitudes could not be attributed to the courses.

[29] Attendees are tracked by name and business affiliation, text fields that are difficult to match up over time.

11 Summary and Conclusions

For many years, the six centers have provided a wide range of educational services, with broad objectives designed to collect, transfer, research, evaluate, demonstrate, and showcase energy-efficiency concepts, technologies, and products for manufacturers, businesses, researchers, educational institutions, and the general public. One objective that is receiving attention from the utilities is the centers' ability to affect energy-saving action. The changes in State energy codes have led the utilities to look to the centers as a new source for energy savings. Many of the recommendations in this report are guided to improving the likelihood that center courses will lead attendees to take energy-saving actions.

11.1 Study Methodology

This study involved four separate activities:

- A satisfaction survey of 318 attendees to the six centers in 2003.
- Six case studies of specific issues, one for each center. These case studies are summarized in Table 11.1.
- An examination of the Best Practices at three other energy-efficiency organizations and two professional firms that offer training of trainer services and other adult education activity support.
- A brief examination of the in-class evaluation materials used by the centers.

11.2 Overall Recommendations

11.2.1 Marketing

As the 2002 evaluation suggested, the centers still need to expand the marketing reach beyond existing channels and draw more attendance from persons and firm that have not previously partaken in center activities. Other suggestions include:

- Provide marketing messages that emphasize to potential attendees direct benefits to them from attending courses.
- Increase the reach of course-specific marketing efforts by partnering with leading trade groups.
- Market course offerings at professional conferences and trade shows.
- Identify and obtain certification to offer additional educational credits.
- Target e-mail marketing to only those parties likely to be interested in the course.
- Make course content specific to one (or possibly two) professions.
- Bring some courses closer to the customers.
- Offer shorter courses for some subjects and audiences.
- Consider charging for courses.

Table 11.1: Summary of Six Center Evaluation Case Studies

Center Name	Case Study	Purpose of Case Study	Case Study Activities
PG&E's Pacific Energy Center	Tool Lending Library	Review the operations of the TLL, with emphasis on estimating the TLL's record on saving energy.	Interview with staff, survey of 104 tool borrowers, follow-up interviews with 11 largest energy savers.
PG&E's Energy Training Center	T-24 Courses	Identify approaches to increase participation in T-24 courses.	Participant and nonparticipant surveys. In-depth interviews with industry experts.
SCE's Agricultural Training Application Center	Moisture Measurement Workshop	Identification of approaches to increase participation by agribusinesses and attracting new customers from additional selected market segments.	Interviews with staff and instructor, interviews with 3 agricultural associations, survey of 45 eligible customers (agricultural and others), and interviews with 6 prior attendees.
SCE's Customer Technology Application Center	Hard to Reach Customers	Identify approaches to increase participation in CTAC courses of HTR customers in the Coachella Valley.	In-depth interviews with business associations and other organizations in Riverside County. Secondary research on the composition of the region.
SCG's Energy Resource Center	Lighting Seminars	Identify approaches to increase participation in two ERC courses on lighting.	In-depth interviews with target market industry experts.
SDG&E	Managing your Business's Energy Costs	What steps could be taken to increase enrollment.	Interviews with staff, interviews with 5 cosponsoring organizations, interviews with 10 participants, and surveys of 45 eligible customers.

11.2.2 Course Design and Implementation

The Best Practice examination found a set of principles that courses designed to educate adults should consider in their design. Among these are the following:

- Focus courses on obtaining actions not just transmitting knowledge.
- Structure course content so that it is practical and applicable to the participants in their jobs.
- Limit course content to teaching of three major objectives; do not overwhelm attendees with too much information.
- Build in opportunities for post-training reinforcement.
- Structure courses so that they engage the attendees in active participation in order to retain information conveyed.
- Consider providing training to trainers to incorporate adult learning concepts.

- Structure each workshop so that each attendee leaves with an action plan developed by that attendee.

11.2.3 Evaluation

Evaluation should be an important part of the centers' activities. We recommend its use in the following ways:

- Use evaluations to determine if actions are being taken as a result of course attendance.
- Use evaluations to collect more than just satisfaction information, including marketing source, instruction quality, issues with course content, issues with setting, and helpfulness in moving to energy actions.
- Perform evaluations early and often for multi-day courses. Waiting until the end of a course does not help current attendees.

11.3 Findings from the Statewide Survey of Course Attendees

A satisfaction survey was administered by phone to 318 attendees to the six centers in 2003. A summary of the results includes:

- Overall satisfaction levels are quite good for the majority of Education and Training Services workshops, with nine out of 10 participants rating themselves satisfied with the workshop they attended. Similarly, nine out of 10 attendees would recommend the workshop they attended to a colleague.
- Overall, the strongest points of the workshops are the strengths of the instructors, with 'technical knowledge of the instructor' and 'teaching skill of the instructor' receiving favorable ratings by nearly all attendees (97% and 96% of respondents, respectively).
- Eight out of 10 participants feel that they better understand how to improve efficiency at their own facilities and are more likely to specify energy-efficient options in the future (83% and 88%, respectively). Three-quarters are more aware of high-efficiency solutions and have more confidence in the performance of these products (80% and 78%, respectively).
- Over one-third of workshop attendees implemented operation and maintenance changes at their facilities. Approximately one-third of workshop attendees (36%) report operational and maintenance changes made as a result of their participation in the workshop.
- A majority of participants feel that the course information will influence future purchase decisions (64%). Building managers are most likely to expect future decisions to be influenced toward more efficient options (77%).
- About 10% of attendees report subsequent participation in utility rebate programs as a direct result of their workshop attendance.

11.4 Recommendations for Each Case Study

11.4.1 Recommendations for the Pacific Energy Center (PEC) Tool Lending Library (TLL)

This case study investigated the Tool Lending Library (TLL) to estimate the amount of energy saved by borrowers:

- **Funding for TLL should be increased.** The TLL should grow at a more aggressive rate. All the indicators are there to suggest that the TLL should be expanded. The TLL is a relatively low-cost service that helps generate substantial benefits. This research shows that when firms are made aware of the tool lending concept, they are very interested in the services. With strategic marketing, the TLL could expand demand for the services. Finally, given the work done to use the Internet for on-line applications and answering technical questions, the TLL is well organized and should be capable of meeting larger demand if the budget were increased.

- **Use promotion wisely.** If the TLL wants to substantially increase lending activity they will need to market more, building demand strategically so that growth occurs in a controlled fashion and projects undertaken are ones with high potential returns. However, we do not recommend broad-based advertising for the TLL as it cannot be controlled. A better strategy would be to use broad-based marketing to attract new faces to the Pacific Energy Center courses and then use these courses as a conduit to the TLL. In addition, the TLL should continue its outreach to special groups and to utility reps who can scout for good applications. Over time, we suspect that the new webpage, which is less than a year old, will become an important source of new leads.

- **Move towards a separate budget line for the TLL**. The obscurity of the TLL is partly due to the fact that the TLL stays hidden within the Pacific Energy Center's activities. Giving the TLL its own budget line brings greater attention and awareness, which would be positive, and more scrutiny, which given the results of this evaluation, should be no problem for the TLL to handle.

11.4.2 Recommendations for the Energy Training Center (ETC)

One key objective of this case study was to find out why more people were not taking Title 24 (T-24) courses. Another important objective was to help the PG&E Energy Training Center (PGE-ETC) prepare for changes in the T-24 rules that will go into effect in October 2005. These rule changes will create a new need and demand for T-24 training, and it is important that the PG&E-ETC be ready to meet this new demand effectively. The following are recommendations for accomplishing this. They are ranked based on average ratings of the recommendations provided by T-24 experts.

- **Make Title 24 (T-24) presentations at trade association and ICC meetings and write T-24 articles for trade association journals.** The T-24 experts say

that market actors are more willing to listen to information presented by their own trade associations. ICC meetings represent a unique opportunity to get access to builders.

- **Do a targeted T-24 mailing to key market actors.** This mailing would emphasize the importance of the impending T-24 standards and would feature success stories. These might be builders or contractors who are avoiding problems down the road by getting T-24 training now. The effectiveness of the mailing would be increased if it were done in cooperation with trade associations. For example, the information might be sent under the cover letter of a number of different trade associations, with postal costs shared among the participating organizations.

- **Work with HVAC supply houses to disseminate T-24 information.** Experts note that HVAC contractors rely a lot on these companies for energy efficiency information.

- **Work with the California Energy Commission (CEC) and other California Energy Centers to create "one-stop shopping" for T-24 training information.** A unified calendar listing all the T-24 training opportunities available across the state would be useful for market actors. The CEC website would be the logical place for such a calendar.

- **Work with the CEC and other California Energy Centers to create a "Title 24 for Dummies" booklet.** This would be a user-friendly way to introduce many market actors to the basics of the new T-24 rule changes. This introductory knowledge could encourage some market actors to take more in-depth training.

- **Work with second-tier market actors such as mortgage and insurance companies to increase T-24 awareness.** These industries will be affected by the T-24 changes and work closely with new homebuilders.

- **Continue and even expand the PG&E-ETC's mobile training component.** The surveyed market actors and the T-24 experts all agreed that a mobile training center would increase attendance. They recommended both on-site trainings as well as classroom trainings in other locations besides Stockton.

- **Explore the possibility of supplementing T-24 training center courses with web-based seminars.** While web-based seminars would certainly be no substitute for the PG&E-ETC's hand-on training, they might be useful for providing market actors with a basic introduction to the new T-24 rules. This knowledge might be enough to encourage market actors to take more in-depth courses.

- **Make the new T-24 standards more relevant to the bottom line of businesses in both marketing messages and course content.** Experts believe that market actors will be more likely to take T-24 training if they have a better idea of the

financial benefits of early T-24 training as well as the financial penalties of waiting too late. Training on how to sell T-24 services would also be a useful addition to class content.

- **Consider a wider variety of T-24 course offerings**. Many experts emphasized the important of market actors "learning to walk before they can run." Although hands-on training on how to implement new T-24 requirements is important, there is also a need for more basic instruction on what the T-24 changes are and what the larger implications will be. Such introductory courses would allow PG&E-ETC to attract a broad range of market actors. As noted above, greater use of the mobile training center and web-based seminars would also broaden the appeal of PG&E-ETC's T-24 instruction.

11.4.3 Recommendations for Agricultural Technology Application Center (AGTAC) Case Study

This case study focused on the factors that impede agribusiness attendance at this workshop and examined opportunities for broadening the reach of this workshop to nonagricultural irrigation markets.

- **Increase the reach of course-specific marketing efforts by partnering with leading trade groups**. This should be a key focus of marketing for the moisture-sensing workshop's future marketing efforts. The use of promotions in trade association publications or announcements could be particularly helpful for outreach to golf course managers and to agribusinesses. In the former case, there is only a single trade group of widespread importance. If AGTAC could persuade the Southern California Golf Course Supervisors Association (SCGCSA) to assist in its promotional efforts, this would effectively put course information before most members of this market segment. In the case of the agribusinesses, there are more trade groups of importance, but the County Farm Bureaus are some of the most important. Significantly, we found willing partners in these organizations and we urge AGTAC to quickly follow up to establish the cooperative relationships that will allow for joint efforts in the future.

- **Rewrite promotional materials for this course**. In conjunction with the recommendation to partner with key trade groups, this should be a priority for future marketing of the Moisture Sensing Workshop. Marketing materials need to draw a more direct linkage to key concerns and benefits to participants; something that the promotional material used in 2003 did not do. The course description is neutral and does not mention the importance of course techniques to prospective participants. Cost savings is a key consideration that needs to be highlighted. The materials could also explicitly state that the irrigation techniques taught are consistent with the practices required in the updated State certification requirements.

- **Expansion of the e-mail effort**. The key drawback to the current e-mail list is its reliance upon addresses gathered from past program participants. In order to increase marketing effectiveness of this approach, AGTAC must begin to compile e-mail addresses of nonparticipants as well. One approach would be to compile a better list in house by acquiring relevant lists from other sources. If lists cannot be acquired from the Farm Bureaus and other organizations, AGTAC should request that announcements be placed in e-mail communications with their members and/or that links be placed on their websites.

- **Build links from other SCE energy efficiency and business sector web areas to AGTAC's site**. Agribusiness browsers may have reason to come to the AGTAC Website, and may come across the course announcement. Other customers are unlikely to find a link to the AGTAC section by means of navigating through the SCE site and browsing its content. At present then, the AGTAC site looks effective for delivering information to agricultural customers but perhaps not to other markets served by this center.

- **Schedule irrigation workshops in January and February**. Because seasonal activity schedules vary by crop and by business specialty, the timing of the spring upsurge in activity probably varies from one market segment to another. To be prudent, scheduling of irrigation workshops should probably avoid the shoulder period between late winter and early spring as well, as spring is the worst time to offer courses to customers with irrigation operations.

- **Schedule workshops during relevant conventions or trade shows could improve attendance.** Over half of the respondents (60%) indicated that this step would increase their likelihood of attendance. This effect was strongest within the golf industry, where two-thirds indicated this arrangement would increase their likelihood of workshop attendance. Among the golf industry, key trade shows are those of the Golf Course Superintendents Association (at the local, state and national levels) and the PGA Tradeshows.

- **Offer both full 3-hour workshops as well as shorter, less intense informational sessions.** Agribusinesses are most sensitive to this issue, so any new short course offerings should be directed to this segment first.

- **Bring some courses closer to the customers.** Efforts to bring the courses to the customers should include the golf course managers segment. This might be best accomplished by partnering with the SCGCSA. Given the singular importance of this trade group, such a partnership is likely to be effective in raising the course profile among golf course managers.

- **Test the effectiveness of alternative educational approaches**. The findings from this research suggest that an audiovisual format such as DVDs or videotapes could be popular with certain market segments. The data indicate, however, that this would be a worthwhile direction to pursue in addition to, not in the place of,

the workshop. There seem to be some customers who prefer the hands on, interpersonal approach of a workshop as well as some who prefer the less interactive AV mode. Pursuing only one educational approach or another could improve outreach to a particular market segment, but not overall reach into the customer market. Both workshops and AV approaches appeal to approximately one-third of the market.

- **Continue to seek out high-caliber instructors.** Satisfaction with past course experiences and expectations of high-quality course offering are motivators for customers to closely examine the detailed brochures used in marketing these courses and to enroll in new courses.

11.4.4 Recommendations for Customer Technology Application Center (CTAC)

This case study looked at ways to increase course attendance of hard-to-reach customers in the Coachella Valley at courses offered locally.

- **Continue to work with Chambers of Commerce to get messages to business owners.** CTAC's list of stakeholders for the Coachella Valley includes only two Chambers other than the Palm Desert Chamber, and relies heavily upon the Palm Desert Chamber to disseminate information, but CTAC's program manager indicated that "there is no feedback loop in place to ensure that business owners are actually receiving information" about the workshops. Additional personal contact with Chamber representatives is necessary.
- **Broaden marketing efforts by sending materials directly to all Chambers of Commerce and additional business organizations.** This will expand upon the benefits of working through an organization with existing and loyal membership base by establishing new networks with include local governments and economic development agencies.
- **Update contact lists and establish personal relationships with these contacts.** The contact lists CTAC provided to the evaluation team included someone who had left the Chamber of Commerce over one year ago and another contact that was completely unfamiliar with CTAC or of courses offered by Edison in their area. Both of these contacts were in the Temecula/Lake Elsinore area.
- **Follow up with organizations after sending materials regarding course offerings.** Establishing the personal relationships and following up with contacts in the area will help CTAC communicate the importance of the courses (and the local business organizations' roles in promoting them) and will help CTAC better determine how well the information is being disseminated.
- **Establish an SCE presence in the community by participating in local events.** This will help Edison build additional trust through increased community presence. Respondents stressed the importance of in-person, face-to-face meetings and workshops and emphasized that putting a face with the utility would build trust within the community.

- **Provide information to businesses organizations on locally held workshops with sufficient lead time.** This lead time will allow organization to inform their members in newsletters, at meetings and in e-mail bulletins.
- **Pursue opportunities to coordinate with the Coachella Valley Economic Partnership.** The Coachella Valley Economic Partnership recently received a grant with three priorities, including health, tourism, and energy and is developing an energy and technology program with local colleges (including College of the Desert, California State at San Bernardino, and University of California at Riverside). This may be an opportunity to piggyback on existing efforts and show a presence in the community.
- **Marketing should emphasize how attending the workshop will help the businesses bottom line – saving money.**
- **Materials should make clear what the participant will get out of the class.** This should include what the participant will be able to do with the information they obtain and that they will walk away with written or other materials.
- **Endorsement or co-sponsorship by local organizations should be included wherever possible.**
- **Workshop titles should be clear.** The workshop title should convey exactly what the workshop will cover in lay terms.
- **Offer shorter (2- or 3-hour classes) early in the morning.** It is difficult for small business owners to be away from their store. They are hesitant (even when able) to take time away from the store. Courses offered early in the morning (that include breakfast) are more likely to draw this crowd.
- **Offer classes during the summer.** Although businesses are open year-round, activity is decreased during the summer months, and business owners will be more likely to have time to attend the course.
- **Offer some Spanish-language classes.** Although most business owners speak English fluently, offering courses in Spanish reflects a willingness to reach out to the community. It may also increase attendance among native Spanish speakers who are less comfortable with English.
- **Provide materials to reference after the class.** Many participants will want materials that they can reference after the class. Reference materials will increase the sense that they have walked away with something and will increase the probability that they will take action on what was covered in the course.
- **Provide courses that are highly applicable to the area.** CTAC should select courses that are specific to small businesses and that focus on cooling and lighting costs or technologies. Since these are business owners and not technical people, the information presented should be at the level of someone who will be purchasing, not someone who needs to understand how things work.
- **Include examples and/or exercises that are targeted to this area.** Half of the interview respondents indicated that case studies of local businesses are key.

11.4.5 Recommendations for Energy Resource Center (ERC) Case Study

This case study explored the reasons for low attendance at two workshops on efficient lighting and approaches for increasing participation.

- **Use professional organizations and their existing media to market courses to specific groups of professionals.** Respondents indicated heavy reliance on trade associations, professional organizations, and membership groups for information. At a minimum, organizations may be willing to send workshop calendars or information about specific courses to members along with their regular mailings, or to send an "e-mail blast" to members regarding specific courses. "E-mail blasts" for specific courses is preferable, as this provides an opportunity to focus the message on what is of interest to their members and on a specific event.

  Forming more strategic alliances with these trade and professional organizations may improve penetration of workshops within the target market. Representatives of these organizations show a willingness to partner with the ERC. The Best Practices interviews indicate that educational organizations that have strong alliances with trade and professional organizations benefit from them (see Section nine for a more detailed discussion of these alliances.)

- **Market course offerings at professional conferences and trade shows.** Professional conferences and trade shows provide a unique opportunity to market to a concentrated and targeted group of professionals. Participating in these events also shows a commitment on the part of SCG to the organizations and professions represented, and allows SCG staff to develop relationships with the attendees.

- **Offer courses in conjunction with professional conferences or trade shows.** The ERC should consider offering specific lighting courses in conjunction with a trade show that attracts a large number of the target audience – bring the workshop to them. The likelihood that many attendees may not offer services within the SCG service territory may be offset by the benefits of this approach (high attendance and visibility).

- **Continue promoting workshops through e-mail.** A majority of course attendees report hearing about the class via e-mail, indicating that this is an effective marketing tool. The Best Practices interviews, however, indicate that e-mail marketing is most effective for promoting courses to those who are familiar with your organization. We are unsure whether familiarity with SGC is sufficient recognition to draw participants unfamiliar with the ERC. E-mail announcements about the course from trade or professional associations, however, would overcome the lack of familiarity.

- **Use targeted marketing lists (with a tailored message as discussed below) to promote classes.**

- **Marketing messages should be specific to the professional group targeted.** Respondents were clear that the concerns and proclivities of the different professions currently targeted differ greatly. To attract members of a specific profession, the message must speak to their issues and needs:
    - Address the issues of interest to that particular profession. (See recommendation below regarding specificity of course content for more detail.)
    - Include the continuing education credits applicable to that profession.
    - Identify the profession by name.
    - Identify activities included in the course.
    - Identify what the audience will be able to do with the provided information (i.e., how it is of practical benefit to the participant).

  The ERC must deliver what is promised in the marketing materials. Word of mouth is a great advertisement for the center's courses, and if the courses deliver what is promised in the marketing materials, attendees will be very satisfied and will pass that information on to others.

- **Course content should be specific to one (or possibly two) professions.** Architects and interior designers are interested in the aesthetics and color rendering of lighting, as well as saving the client money. Lighting designers and engineers are interested in technical information that will allow them to specify the appropriate equipment for an application. Business owners are interested in a bottom line message related to saving money and increasing sales; they are not interested in technical information but merely what options may be available to achieve their economic objectives.

- **Courses should include hands-on activities.** Regardless of profession, respondents want to be able to experience what they are learning. This includes being able to see new technologies or the energy savings of different approaches and to practice any new skills that are part of the course. Respondents to the Best Practices interviews indicate that learner activities (such as problem solving or group activities) greatly enhance learning as well as participant satisfaction. The ERC currently includes displays and demonstrations in its workshops.

- **Content must be practical and applicable to the participants in their jobs.** Respondents are willing to take the time away from work for education only if they believe that the course will provide information or skills that they can apply almost immediately. This also motivates management to send staff to educational opportunities.

- **Identify and obtain certification to offer additional educational credits.** Respondents indicate that educational credit is an important motivator for attending workshops. The ERC currently offers AIA credits. It should identify additional professional credits that it could offer that would attract targeted markets. One item mentioned by a respondent was the California Intern

Development Program (CIDP), which requires class attendance and may be a source for attendees early in their career.

11.4.6 Recommendations for San Diego Gas & Electric (SDG&E) Seminar

This case study examined the barriers to seminar participation for small business customers and explored other information delivery options as solutions that might better address the critical participation barriers.

- **Marketing strategies and outreach for educational services for the small business sector must reflect the difficulty of attracting interest in seminar attendance.** Awareness-building alone will not generate substantial interest in seminar attendance, as this fails to address a key barrier to participation. Interest levels are very low, information seeking on efficiency issues is rare, and willingness to travel to a seminar is limited. The other primary barrier to attendance is a matter of scheduling conflicts, driven in part by the critical need for small business staff to be on the job. Challenges for this seminar are to find ways to deliver information that are suited to a market which has low motivation overall, but which may contain pockets of opportunity.

- **Try a trial run of target marketing to this seminar to customers with expressed needs to reduce energy costs.** One strategy that has worked with some success for other utilities is to target energy-efficiency services to customers with high bill complaints. It is recommended that SDG&E pilot a test using information (leads) from the Customer Service Department to target customers already concerned about their energy costs.

- **To lessen scheduling difficulties, courses for small business should be kept to two hours or less and offered within five miles of the business audience. These findings suggest that something other than a formal seminar may be better suited to the small business market.** More informal, short presentations with leave-behind materials might be more appropriate. These could either function as stand-alone events or serve as a tool for recruiting small businesses to more detailed seminars.

- **Alternative educational approaches should be developed to supplement the reach of the seminars.** Scheduling barriers are a relatively intractable characteristic of the small business market. To increase the effectiveness of efficiency education in this segment, SDG&E should diversify its educational methods.

- **The concept of using CDs or DVDs looks very promising, especially as a means of delivering information to the smallest businesses.** This research uncovered a high level of interest in electronic and print materials on energy efficiency as an alternative to seminars, with DVDs and CDs having strong appeal

to businesses with fewer than five employees. This finding is particularly important given the context of the difficulty of addressing seminar attendance barriers for these very small firms.

- **The approach of seeking to partner with local business groups is sound.** The small business market expressed receptivity to attending seminars if they were held in conjunction with a trade show or other meeting where the customer was already in attendance.

- **Success in partnering with local business organizations will be linked to the effectiveness of the partnering organization in turning out an audience.** Where SDG&E has found an effective partner for cosponsoring these seminars, it would be worthwhile to nurture the relationship. Such partners provide marketing leverage that is difficult to replicate. One consideration for ongoing partnerships will be how to interest members in attending more than one session on energy-related subjects. Attention must be given to how to keep presentation fresh and appealing.

- **New partner organizations should be selected in a strategic fashion.** In seeking out new organizations to partner with, it appears that any particular partner will have finite reach, either geographically or with respect to market segment. (Consider for example, the local chambers of commerce vs. trade groups for restaurants or automotive outlets.) It might make sense to consider recruiting a set of partner organizations, with strategic consideration given to prioritizing which markets are to be targeted.

A Appendix A: Attendee Survey

(ASK TO SPEAK TO NAME ON SAMPLE)

Hello, I'm _____ with ICR. The director of the (UTILITY NAME) (CENTER) gave us your name as someone who might be willing to help with our survey. We are calling businesses that took part in the workshops offered by (the) (CENTER) to get feedback on that workshop experience and your thoughts and recommendations. This survey will only take 10 minutes of your time, and would help (the) (CENTER) offer better course in the future.

COURSE Course
IDENT Ident
01 ENERGY TRAINING CENTER (PGE-ETC)
02 PACIFIC ENERGY CENTER (PGE-PEC)
03 AGTAC
04 CTAC
05 ENERGY RESOURCE CENTER
06 ENERGY TRAINING SEMINARS
UTILITYC Utility code
1 PACIFIC GAS & ELECTRIC (PGE)
2 SOUTHERN CALIFORNIA EDISON
3 SOUTHERN CALIFORNIA GAS
4 SAN DIEGO GAS & ELECTRIC
UTILITYN Utility Name
NAME Name
TITLE Title
COMPANY Company
ADDRESS Address
CITY City
STATE State – Alpha codes
ZIP Zip code +4
SDATE Date
E-MAIL E-mail
EVENT_ID Event ID
CTAC_CST CTAC Customer Num
REG_ACCT Reg Acct
PLAN_ ATT Plan Attend
EVNT_CAT Event Catagory
EVNT_CLS Event Class
EVNT_TYP Event Type
EVNT_COR Event Corrd
ORDER_NM Order Number
REG_TYPE Reg Type
ACCT_TYP Acct Type

AUDIT_FL Audit Flag
HTR HTR
HOW_MANY How Many
UTATTND Utility Attending
ATTENDED Attended

A1. According to our records, you went to a workshop called [COURSE] in 2003. Is this correct?

QNA1

1 Yes

[IF RESPONSE IS 2 OR D, TRY TO PROMPT RECALL. TERMINATE IF RESPONDENT IS UNABLE TO REMEMBER SEMINAR]

A2. Which of the following roles best describes your business reason for attending this workshop? [READ LIST IN ORDER and CHOOSE FIRST THAT APPLIES]

QNA2

1 My company builds buildings or provides energy related services or equipment –such as design, engineering, or construction — to customers
2 My company handles operations of property that we own or manage but that we do not necessarily occupy.
3 My company occupies space for which we make energy related decisions.

[IF A2=2 OR 3, GO TO A4.]

[IF A2=1]

A3. What type of energy related services or equipment do you provide? [ACCEPT ALL THAT APPLY]

QNA3_1 1 Construction
QNA3_2 1 Engineering or architectural design
QNA3_3 1 Lighting or other design assistance
QNA3_4 1 Equipment sales, installation, repair or maintenance
QNA3_5 1 Facility operations or maintenance
QNA3_6 1 Research
QNA3_7 1 Other (SPECIFY)
QNA3_8 1 Don't Know
QNA3_9 1 Refused

A4. How many employees are there at your company?

QNA4

1-9999997
9999998 Don't Know
9999999 Refused

A5. Does your firm primarily conduct business in a language other than English?

QNA5

1 Yes
2 No
8 Don't know
9 Refused

NP1. What sources of information do you or other decision makers at your firm prefer to use to collect information on energy efficiency or on new technologies generally?
[DO NOT READ LIST OF RESPONSES. ENTER ALL THAT APPLY]

QNNP1_01	1	Trade journals
QNNP1_02	2	Manufacturers reps
QNNP1_03	3	Distributors or other sales staff
QNNP1_04	4	Seminars or workshops
QNNP1_05	5	Colleagues within my company
QNNP1_06	6	Colleagues outside my company
QNNP1_07	7	Consultants (engineers, architects)
QNNP1_08	8	Utility company
QNNP1_09	9	Internet
QNNP1_10	7	Other [SPECIFY]_____
QNNP1_11	8	Don't Know
QNNP1_12	9	Refused

PARTICIPATION

C1. How did you hear about the [CENTER] and the seminars/workshops they offer? Where else? [DO NOT READ. ENTER ALL THAT APPLY.]

QNC1_01	1	A utility representative
QNC1_02	1	Information in my utility bill
QNC1_03	1	Brochure
QNC1_04	1	E-mail
QNC1_05	1	Fax
QNC1_06	1	Internet/the [CENTER]'s website
QNC1_07	1	Trade magazine
QNC1_08	1	Professional organizations
QNC1_09	1	Display at trade show
QNC1_10	1	Someone at my company
QNC1_11	1	A colleague outside my company
QNC1_12	1	A consultant or contractor
QNC1_13	1	Other [SPECIFY]_____
QNC1_14	1	Don't Know
QNC1_15	1	Refused

C2. What would be the best way to inform you or others in your position about future [CENTER] seminars and workshops? [DO NOT READ. ENTER ALL THAT APPLY]

QNC2_01	1	A utility representative
QNC2_02	1	Information in my utility bill
QNC2_03	1	Brochure
QNC2_04	1	E-mail
QNC2_05	1	Fax
QNC2_06	1	Internet/the [CENTER]'s website
QNC2_07	1	Trade magazine
QNC2_08	1	Professional organizations
QNC2_09	1	Display at trade show
QNC2_10	1	Workshop session
QNC2_11	1	Someone at my company
QNC2_12	1	A colleague outside my company
QNC2_13	1	A consultant or contractor
QNC2_14	1	Other [SPECIFY]_____
QNC2_15	1	Don't Know
QNC2_16	1	Refused

C3. Using a scale of 1 to 5, where 1 is "poor" and 5 is "excellent", how would you rate each of the following aspects of the [CENTER] [COURSE] course you took? [READ LIST.]

5 Excellent
4
3
2
1 Poor
0 (DO NOT READ) Not Applicable
8 (DO NOT READ) Don't Know
9 (DO NOT READ) Refused

(ROTATE)

QNC3A	a.	Convenience of the course location
QNC3B	b.	Convenience of the time it was scheduled
QNC3C	c.	Technical level of information provided
QNC3D	d.	Clarity of the information provided
QNC3E	e.	Technical knowledge of the instructor
QNC3F	f.	Teaching skill of the instructor
QNC3G	g.	Usefulness of demonstrations

C4. Now I have a few questions on the usefulness of the course. Please rate the following aspects of the course, using another 1 to 5 scale, where 1 is "not at all useful" and 5 is "extremely useful." If the statement I read does not apply to you or the course, please indicate that it is not applicable.

How useful was the information . . .? [READ ITEM]

5 Extremely Useful
4
3
2
1 Not at all Useful
0 (DO NOT READ) Not Applicable
8 (DO NOT READ) Don't Know
9 (DO NOT READ) Refused

QNC4A a. [ASK IF A2 =2 OR 3] For you when making energy-using equipment purchase decisions at your facility

QNC4B b. [ASK All] In helping you explain to others in your company the rationale behind certain choices

QNC4C c. [ASK IF A2 = 1] In helping you to better sell your existing energy-related services

QNC4D d. [ASK IF A2 = 1] In helping you to sell new or different energy-related services

C5. Overall, on a scale from 1 to 5, with 1 being "not at all satisfied" and 5 being "extremely satisfied", how satisfied would you say you were with the [CENTER] [COURSE] course you took?

QNC5

5 Extremely Satisfied
4
3
2
1 Not at all Satisfied
0 (DO NOT READ) Not Applicable
8 (DO NOT READ) Don't Know
9 (DO NOT READ) Refused

[IF C5 = 1,2, OR 3 ASK C6, OTHERWISE SKIP TO C7]

C6. What could (the) (CENTER) have done to make you more satisfied? (PROBE FOR COMPLETE ANSWERS)

QNC6

7 Other
0 Nothing
8 Don't know
9 Refused

C7. Would you recommend this course to a colleague? Please answer on a scale of 1 to 5, with 1 being "strongly discourage attending" and 5 being "strongly recommend attending."

QNC7

5 Strongly recommend attending
4
3
2
1 Strongly discourage attending
8 Don't know
9 Refused

C8a. How long did it take you to travel to the seminar?

QNC8A

1-1440 ENTER ANSWER IN MINUTES
9998 Don't know
9999 Refused

C8b. Approximately how many miles was that?

QNC8B

1-1000 ENTER NUMBER OF MILES
9998 Don't know
9999 Refused

The next few questions ask about any effects that the [CENTER] course(s) you took may have had on decisions to purchase or upgrade energy-using equipment at your facility.

C9. Using a 1 to 5 scale, where 1 means "strongly disagree" and 5 means "strongly agree," please tell me how much you agree or disagree with each statement.

As a result of taking the [COURSE] course…… [READ STATEMENT]

5 Strongly Agree
4
3
2
1 Strongly Disagree
0 (DO NOT READ) Not Applicable
8 (DO NOT READ) Don't Know
9 (DO NOT READ) Refused

(ROTATE)

QNC9A a. [ASK IF A2=1] I am more aware of energy efficient solutions

QNC9B b. [ASK IF A2 = 2 OR 3] I better understand how to improve the energy efficiency at my facility

QNC9C c. I have more confidence in the performance of energy efficient equipment

QNC9D d. I can promote energy efficiency to my own management better

QNC9E e. [ASK IF A2 = 1] I am more likely to specify "energy efficient" equipment when I have a choice

QNC9F f. [ASK IF A2 = 2 OR 3] I can more confidently evaluate the energy efficiency performance claims made by salespeople

QNC9G g. My company/business has or will change some of its policies related to specifying or selecting energy efficient equipment

QNC9H h. [ASK IF A2=1] My company is better able to sell its existing energy-related services

QNC9I i. [ASK IF A2=1] My company can sell new or different energy-related services

C10. How would you rate your knowledge of energy efficiency measures as compared to your peers in your industry? Would you say that <u>before</u> taking this course you were: more knowledgeable than most in your field, about as knowledgeable as average, or not well informed about energy efficiency topics.

QNC10

1 More knowledgeable than most
2 About as knowledgeable as average
3 Not well informed about energy efficiency

8 Don't Know
9 Refused

[ASK IF A2 = 2 OR 3, OTHERWISE SKIP TO C14]

C11. Since you took this workshop, has your company purchased any new energy-using equipment?

QNC11

1 Yes
2 No SKIP TO C14
8 Don't Know SKIP TO C14
9 Refused SKIP TO C14

C12. Would you have purchased the same equipment type, model, and efficiency level if you had not taken [COURSE] course?

QNC12

1 Yes SKIP TO C14
2 No
8 Don't Know
9 Refused

C13. Did the course influence you to buy a more energy-efficient piece of equipment than you otherwise would have?

QNC13

1 Yes
2 No
8 Don't Know
9 Refused

C14. How influential would you say the information you received from the [COURSE] course is likely to be on your future equipment purchase decisions. That is, on a scale of 1 to 5, where 1 is "not at all influential" and 5 is "very influential," how influential is this information likely to be?

QNC14

5 Very Influential
4
3
2
1 Not at all Influential
0 Not Applicable
8 Don't Know
9 Refused

C15. Did the [COURSE] course affect how your business operates or maintains any of its equipment?

QNC15

1 Yes

2	No	SKIP TO C17
8	Don't Know	SKIP TO C17
9	Refused	SKIP TO C17

C16. In what way have you changed how you operate or maintain this equipment as a result of this workshop? [DO NOT READ LIST. ENTER ALL THAT APPLY]

QNC16_1	1	Decreased the hours of operation
QNC16_2	1	Shifted the hours of operation
QNC16_3	1	Optimized the hours of operation
QNC16_4	1	Optimized the way the equipment is operated
QNC16_5	1	Beefed up servicing and maintenance of equipment
QNC16_6	1	Provided staff training on operations and/or maintenance
QNC16_7	1	Other [SPECIFY]_____
QNC16_8	1	Don't Know
QNC16_9	1	Refused

C17. Has your business participated in any utility rebate or incentive programs since the time of your workshop?

QNC17

1	Yes	
2	No	SKIP TO C19
8	Don't Know	SKIP TO C19
9	Refused	SKIP TO C19

C18a. Did your business participate as a result of your taking the [COURSE] course?

QNC18A

1	Yes	
2	No	SKIP TO C19
8	Don't Know	SKIP TO C19
9	Refused	SKIP TO C19

C18b. Which program was that? [DO NOT READ LIST. ACCEPT ALL THAT APPLY]

QNC18B_01	1	Agricultural and Pumping Service Program
QNC18B_02	1	Base Interruptible Program
QNC18B_03	1	CPA Demand Reserves Program
QNC18B_04	1	Critical Peak Pricing
QNC18B_05	1	Demand Bidding Program
QNC18B_06	1	Energy Design Resources
QNC18B_07	1	Express Efficiency
QNC18B_08	1	(The) Goodwatts Program
QNC18B_09	1	Interruptible Service Program
QNC18B_10	1	Multi-family Rebate Program
QNC18B_11	1	Optional Binding Mandatory Curtailment Program
QNC18B_12	1	Savings by Design
QNC18B_13	1	SCE Energy$mart Thermostat Program
QNC18B_14	1	Scheduled Load Reduction Program
QNC18B_15	1	Self Generation Incentives
QNC18B_16	1	Standard Performance Contract
QNC18B_17	1	Summer Discount Plan
QNC18B_18	1	Demand Response Program (Non-specific)
QNC18B_19	1	Energy Efficiency Program (Non-specific)
QNC18B_20	1	Renewable or Self-Generation (Non-specific
QNC18B_21	1	Other (SPECIFY)
QNC18B_22	1	Don't know
QNC18B_23	1	Refused

C19. Is your firm planning to take part in one [SAY "ANY OTHER" IF C17=1] of the utility's programs?

QNC19

1	Yes	
2	No	SKIP TO C21
8	Don't Know	SKIP TO C21
9	Refused	SKIP TO C21

C20. Is this as a result of your taking the [COURSE] course?

QNC20

1 Yes
2 No
8 Don't Know
9 Refused

C21. Have you shared any of the information you received from the [COURSE] seminar with others either within or outside of your company?

QNC21

1 Yes

2 No
8 Don't Know
9 Refused

C22. Many courses discuss the use of measurement tools such as light meters, flow meters, vent hoods, infrared scanners, and watt meters to calculate potential energy savings or to measure actual savings achieved. What specific types of measurement equipment would you find useful but do not already own or have access to? (ACCEPT MULTIPLE RESPONSES)

QNC22_1 1 Light meters
QNC22_2 1 Flow meters
QNC22_3 1 Vent hoods
QNC22_4 1 Infra-red scanners
QNC22_5 1 Watt meters
QNC22_6 1 Other (SPECIFY)_____
QNC22_7 1 None SKIP TO PG1
QNC22_8 1 Don't Know
QNC22_9 1 Refused

C23. (The) [CENTER] has been thinking about loaning energy measurement tools to firms to collect data needed to measure their current energy consumption and help determine if an energy efficiency project would be cost-effective. Is this a service that you might find helpful?

QNC23

1 Yes
2 No
8 Don't Know
9 Refused

[IF YES IN Q.C23, ASK C24 AND C25; OTHERWISE SKIP TO PG1]

C24. What equipment would you be interested in borrowing?

QNC24_1 1 Light meters
QNC24_2 1 Flow meters
QNC24_3 1 Vent hoods
QNC24_4 1 Infra-red scanners
QNC24_5 1 Watt meters
QNC24_6 1 Other (SPECIFY)_____
QNC24_7 1 Don't Know
QNC24_8 1 Refused

C25. If the tool lending service also supplied technical assistance, what is the minimum amount of support you would need? (READ LIST)

QNC25

1 Just the equipment, with no technical support

2 Instructions on how to operate the equipment
3 Instructions on how to operate the equipment and assistance in what measurements to take and formulas to use to answer my measurement needs
4 Assistance in what measurements to take and formulas to use to answer my measurement needs
8 (DO NOT READ) Don't Know
9 (DO NOT READ) Refused

[IF CENTER = PGE-PEC OR PGE ETC; AND A2 =1 AND A3 = 1 OR 2, THEN ASK PG SERIES; OTHERWISE SKIP TO END]

PG1. Are you aware that new changes to California's T-24 Building Energy Efficiency Standards will go into effect on October 1, 2005?

QNPG1

1 Yes
2 No SKIP TO END
8 Don't Know SKIP TO END
9 Refused SKIP TO END

PG2. On a scale of 1 to 5 where 1 indicates "not all knowledgeable" and 5 indicates "very knowledgeable," how knowledgeable do you consider yourself about the latest Title 24 building standards?

QNPG2

5 Very Knowledgeable
4
3
2
1 Not at all Knowledgeable
8 Don't Know
9 Refused

PG3. Have you taken any courses to learn more about these new Title 24 standards?

QNPG3

1 Yes
2 No SKIP TO PG6
8 Don't Know SKIP TO PG6
9 Refused SKIP TO PG6

PG4. Who was offering this course? (ACCEPT MULTIPLE RESPONSES)

QNPG4_1 1 The California Energy Training Center (ETC)
QNPG4_2 1 The Sacramento Municipal Utility District (SMUD)
QNPG4_3 1 California Building Industry Institute (CBII)
QNPG4_4 1 My professional/trade association
QNPG4_5 1 HVAC manufacturer/distributor

QNPG4_6 1 Other (SPECIFY) _____
QNPG4_7 1 Don't Know
QNPG4_8 1 Refused

(IF PG4 DOES NOT = 1, ASK PG5, ELSE SKIP TO PG6)

PG5. What is the reason that you didn't take a course with the California Energy Training Center on the new Title 24 changes? [DO NOT PROMPT, BUT RECORD MULTIPLE RESPONSES]

QNPG5_01 1 I did not realize such courses were being offered.
QNPG5_02 1 The courses were not offered on a convenient day of the week.
QNPG5_03 1 The time periods for the courses were not convenient.
QNPG5_04 1 The California Energy Training Center is too far away
QNPG5_05 1 The courses offered too much information to suit my needs
QNPG5_06 1 The courses offered too little information to suit my needs
QNPG5_07 1 The courses did not have enough hands-on instruction
QNPG5_08 1 The courses had too much hands-on instruction
QNPG5_09 1 My company, trade association representative, or HVAC manufacturer/distributor recommended a different course
QNPG5_10 1 My company rarely or never offers training
QNPG5_11 1 The courses were too expensive
QNPG5_12 1 Other (SPECIFY) _____
QNPG5_13 1 Don't Know
QNPG5_14 1 Refused

PG6. Do you plan to take any courses on the new Title 24 standards? [IF PG3 = 1 THEN ASK "DO YOU PLAN TO TAKE ANY MORE COURSES ON THE NEW TITLE 24 STANDARDS?"]

QNPG6

1	Yes	
2	No	SKIP TO PG9
8	Don't Know	SKIP TO PG9
9	Refused	SKIP TO PG9

PG7. Who are you likely to take the courses from?

QNPG7_1 1 The California Energy Training Center (ETC)
QNPG7_2 1 The Sacramento Municipal Utility District (SMUD)
QNPG7_3 1 California Building Industry Institute (CBII)
QNPG7_4 1 My professional/trade association
QNPG7_5 1 HVAC manufacturer/distributor
QNPG7_6 1 Other (SPECIFY) _____
QNPG7_7 1 Don't Know
QNPG7_8 1 Refused

(IF PG7 DOES NOT = 1 ASK PG8, ELSE SKIP TO PG9)

PG8. Why are you not planning to take a course with the California Energy Training Center on the new Title 24 changes? [DO NOT PROMPT, BUT RECORD MULTIPLE RESPONSES

QNPG8_01	1	I did not realize such courses were being offered.
QNPG8_02	1	The courses are not offered on a convenient day of the week.
QNPG8_03	1	The time periods for the courses are not convenient.
QNPG8_04	1	The California Energy Training Center is too far away
QNPG8_05	1	The courses offer too much information to suit my needs
QNPG8_06	1	The courses offer too little information to suit my needs
QNPG8_07	1	The courses do not have enough hands-on instruction
QNPG8_08	1	The courses have too much hands-on instruction
QNPG8_09	1	My company, trade association representative, or HVAC manufacturer/distributor recommends a different course
QNPG8_10	1	My company rarely or never offers training
QNPG8_11	1	The courses are too expensive
QNPG8_12	1	Other (SPECIFY) _____
QNPG8_13	1	Don't Know
QNPG8_14	1	Refused

PG9. Are you currently using any of the new Title 24 standards in your business practices?

QNPG9

1	Yes	SKIP TO END
2	No	
8	Don't Know	SKIP TO END
9	Refused	SKIP TO END

PG10. When were you planning to start incorporating the new Title 24 standards in your business practices?

QNPG10

1 In the next six months
2 Later than 6 months from now, but before the required date (October 1, 2005)
3 When it becomes a requirement (October 1, 2005)
4 My line of business doesn't require me to comply with Title 24 building standards
7 Other (SPECIFY)
8 Don't know
9 Refused

Those are all the question I have for you. Thank you for your time and cooperation and have a nice day.

B Appendix B: Tool Lending Library Survey

PEC TOOL LENDING STUDY

(ASK TO SPEAK TO NAME ON SAMPLE)

Hello, I'm _____ with ICR. We are calling businesses that participated in the Pacific Energy Center's Tool Lending Library to get feedback on that experience, and your thoughts and recommendations on how PEC Tool Lending Library can best serve you in the future.

Our records show that you participated in the Pacific Energy Center's Tool Lending Library and that you borrowed (INSERT # OF TOOLS) on (INSERT DATE) for the following purpose: (INSERT INTENDED USE).

P1. Do you remember borrowing these tools?

QPN1

1	Yes	
2	No	TERMINATE
8	Don't know	TERMINATE
9	Refused	TERMINATE

P2. Which of the following purposes best describes the reason you borrowed the tools? (READ LIST. ACCEPT ONE ANSWER)

QPN2

01 To measure energy use/energy intensity of existing equipment that I wanted to see if it made sense to replace
02 To do site analysis for a new building or for measuring the feasibility of new equipment such as a photovoltaic system
03 To confirm energy savings/use/ intensity of new equipment I recently installed.
04 To test the operation of a piece of equipment I am thinking of purchasing.
05 To obtain general information about equipment in my building, such as to solve a particular operational problem at my building or to establish a baseline use.
06 For research purposes.
97 (DO NOT READ) Other (SPECIFY)
98 (DO NOT READ) Don't Know
99 (DO NOT READ) Refused

P3. Before the loan of the tools on [INSERT DATE] from the lending library, how familiar were you with the operation of the tools you borrowed? (READ LIST AS NECESSARY)

QNP3

1 I had used the equipment before, and needed no instruction on how to use it.
2 I had used this tool or ones like it before, and only needed a quick refresher on how to operate the equipment.
3 I had used this tool before, but still needed detailed instructions on how to use it properly.
4 I had never used such a tool, but its operation is so simple that I did not need any assistance.
5 I had never used such a tool, but needed only a quick overview on how to operate the equipment.
6 I had never used such a tool, and needed detailed instructions on how to use it properly.
8 Don't Know
9 Refused

(IF P3 = 2, 3, 5, OR 6 THEN CONTINUE; OTHERWISE SKIP TO P6)

P4. Did you receive the training you needed on the proper operation of these tools from the Pacific Energy Center Staff?

QNP4

1 Yes
2 No SKIP TO P6
8 Don't Know SKIP TO P6
9 Refused SKIP TO P6

P5. On a scale of 1 to 5, with 5 being extremely important, and 1 being not at all important, how important was the assistance you received in the use of the equipment?

QNP5

5 Extremely important
4 Important
3
2 Not important
1 Not at all important
8 Don't Know
9 Refused

P6. If the tools you borrowed were not available from the PEC Tool Lending Library, what would you have likely done as a result? (DO NOT READ)

QNP6

1 Purchased the equipment
2 Rented it from a commercial firm
3 Borrowed it from somewhere else

4 Used other equipment I already had
5 Done without it, and likely proceeded with the project
6 Done without it and likely not proceeded with the project
7 Hire outside company
8 Don't Know
9 Refused

P7. Overall, as a result of all tools you borrowed in 2003, did you go on to implement any energy saving measures as a result of tool lending?

QNP7

1 Yes
2 No SKIP TO P20
8 Don't Know SKIP TO P20
9 Refused SKIP TO P20

P7a. Why didn't you implement any energy saving measures as a result of the tool lending?

(1=YES, 0=NO)

QNP7A_1-QN7A_8

QNP7A_1 Wasn't cost effective/not enough savings
QNP7A_2 Didn't have the money
QNP7A_3 Haven't gotten around to it but plan to
QNP7A_4 Didn't get approval for the project
QNP7A_5 Still unsure/haven't decided yet
QNP7A_6 Other (SPECIFY)
QNP7A_7 Don't know
QNP7A_8 Refused

(ALL SKIP TO P20)

P8. Was the project you implemented part of any utility or government energy efficiency program?

QNP8

1 Yes
2 No SKIP TO P10
8 Don't Know SKIP TO P10
9 Refused SKIP TO P10

P9. Which program were you involved with?

QNP9

01 Standard Performance Contract
02 Express Efficiency

03 Savings by Design
04 Multi-Family Rebate Program
05 Low Income Energy Efficiency
97 Other (SPECIFY)
98 Don't Know
99 Refused

P10. In which of the following areas were the measures you implemented focused? [READ LIST. ACCEPT MULTIPLE RESPONSES]
(1=YES, 0=NO)

QNP10_01-QNP10_
QNP10_01 Lighting
QNP10_02 Heating, Ventilation, Air Conditioning (HVAC)
QNP10_03 Building Control
QNP10_04 Water Heating
QNP10_05 Motors, Pumps
QNP10_06 Industrial Process
QNP10_07 Process Control
QNP10_08 Refrigeration
QNP10_09 Other (SPECIFY)
QNP10_10 Don't Know
QNP10_11 Refused

P11. How much money did you spend on the project(s)?
QNP11

_____ Dollars (RANGE 1 – 99,999,999)
99999998 Don't Know
99999999 Refused

P12. Have you estimated how much money you will save annually from this project?
QNP12

1	Yes	CONTINUE
2	No	SKIP TO P14
8	Don't Know	SKIP TO P14
9	Refused	SKIP TO P14

P13. On an annual basis, how much money do you expect to save from this project?
QNP13

_____ Dollars/Year Saved (RANGE 9,999,999)
9999998 Don't Know
9999999 Refused

P14. Have you estimated how many kilowatt-hours will you save annually from this project?
QNP14

1	Yes	CONTINUE
2	No	SKIP TO P16
8	Don't Know	SKIP TO P16
9	Refused	SKIP TO P16

P15. On an annual basis, how many kilowatt-hours do you expect to save from this project?

QNP15

_____ KWh/Year Saved (RANGE 1-1,000,000,000)

9999999998 Don't Know
9999999999 Refused

(IF P10 = 02, 03, 04, 06, 07, 97, ASK P16; OTHERWISE SKIP TO P18)

P16. Have you estimated how many therms you will save annually from this project?

QNP16

1	Yes	CONTINUE
2	No	SKIP TO P18
8	Don't Know	SKIP TO P18
9	Refused	SKIP TO P18

P17. On an annual basis, how many therms do you expect to save from this project?

QNP17

_____ Therms/Yr. Saved (RANGE 1 – 9,999,999)

9999998 Don't Know
9999999 Refused

(IF P14 = 2, D OR R, SKIP TO P20)

P18. Have you estimated how many kilowatts of demand you will save from this project?

QNP18

1	Yes	CONTINUE
2	No	SKIP TO P20
8	Don't Know	SKIP TO P20
9	Refused	SKIP TO P20

P19. On an annual basis, how many kilowatts do you expect to save from this project?

QNP19

_____ KW Saved (RANGE 1 – 9,999,999)

9999998 Don't Know
9999999 Refused

P20. On a scale of 1 to 5 with 5 being "totally satisfied" and 1 being "not at all satisfied," how would you rate your overall satisfaction with the Tool Lending Library experience?

QNP20

5 Extremely satisfied
4 Satisfied
3
2 Not satisfied
1 Not at all satisfied
8 Don't Know
9 Refused

P21. On a scale of 1 to 5 with 5 being "extremely likely" and 1 being "not at all likely," how likely would you be to recommend the Tool Lending Library to a friend or colleague?

QNP21

5 Extremely likely
4 Likely
3
2 Not likely
1 Not at all likely
8 Don't Know
9 Refused

P22. Another service offered by the Pacific Energy Center Tool Lending Library is support in designing a measurement methodology to accurately capture the energy use or savings figures you specifically need. Did you receive any technical assistance from the staff at the PEC in formulating the right set of measurement protocols to obtain the answers to your energy saving/use questions?

QNP22

1 Yes
2 No, I did not need it SKIP TO END
3 No, I was not offered it SKIP TO P24
8 Don't know SKIP TO P24
9 Refused SKIP TO P24

P23. On a scale of 1 to 5, with 5 being "extremely useful," and 1 being "not at all useful," how useful was the technical assistance you received?

QNP23

5 Extremely useful
4 Useful
3
2 Not useful
1 Not at all useful

8 Don't Know
9 Refused

(IF P22 = YES, SKIP TO END, ELSE CONTINUE)

P24. If technical assistance to formulate a measurement protocol were offered to you, how likely would you have been to use the service?

QNP24

5 Extremely likely
4 Likely
3
2 Not likely
1 Not at all likely
8 Don't Know
9 Refused

Those are all the question I have for you. Thank you for your time and cooperation and have a nice day.

C Appendix C: Nonparticipants – PG&E's Energy Training Center Study

(IF COMPANY NAME APPEARS TO BE A PERSON'S NAME, ASK TO SPEAK TO THAT PERSON. OTHERWISE, ASK TO SPEAK TO THE OWNER/GENERAL MANAGER)

Hello, I'm _____ with ICR. I am calling on behalf of PG&E and its Energy training Center. Your (name/company) was given to us by the Director of the Energy Training Center as someone who might be able to give some feedback. This is not a sales call. We are trying to find out how to improve energy training programs for builders and energy contractors. This questionnaire will take about 10 minutes and we could really use your help on this.

NAME	Name
ADDRESS	Address
CITY	City
STATE	State – Alpha codes
ZIP	Zip Code +4

A1. Last year PG&E's Energy Training Center sent you a list of training courses that they offer on complying with new Title 24 building standards. There are also courses on improving the energy-efficiency of HVAC systems, windows, and swimming pools. Do you recall receiving this list of courses?

QNA1

1 Yes
2 No
8 Don't know
9 Refused

A2. Have you ever heard of the PG&E Energy Training Center in Stockton, California?

QNA2

1	Yes	
2	No	SKIP TO G1
8	Don't know	SKIP TO G1
9	Refused	SKIP TO G1

A3. How did you hear about the Energy Training Center and the seminars/workshops they offer? Where else? (DO NOT READ LIST. ENTER ALL THAT APPLY)

QNA3_01	1	ETC course calendar in the mail
QNA3_02	1	Utility representative
QNA3_03	1	Information in my utility bill
QNA3_04	1	Brochure
QNA3_05	1	E-mail
QNA3_06	1	Fax
QNA3_07	1	Internet/the ETC's website
QNA3_08	1	Trade magazine
QNA3_09	1	Professional organizations
QNA3_10	1	Display at trade show
QNA3_11	1	Someone at my company
QNA3_12	1	A colleague outside my company
QNA3_13	1	A consultant or contractor
QNA3_14	1	Other (SPECIFY)
QNA3_15	1	Don't know
QNA3_16	1	Refused

A4. Did you or anyone with your company attend any of the courses offered by the Energy Training Center in Stockton, California in 2003 or 2004?

QNA4

1	Yes	
2	No	SKIP TO A6
8	Don't know	SKIP TO A6
9	Refused	SKIP TO A6

A5. Which course(s) did you or your co-workers attend at the Energy Training Center in 2003 or 2004? (DO NOT READ LIST. TRY TO MATCH RESPONSE WITH COURSE ON LIST. IF NOT, TYPE DESCRIPTION OF COURSE IN "OTHER")

		TITLE 24 COMPLIANCE SERIES
QNA5_01	1	Advanced ACCA Manual D
QNA5_02	1	Air Distribution Diagnostic Testing
QNA5_03	1	Duct Design (ACCA Manual D)
QNA5_04	1	Duct Installation Standards
QNA5_05	1	Equipment Sizing and Selection (ACCA Manual J)
QNA5_06	1	Zoning Design (ACCA)
		WHOLE HOUSE ISSUES
QNA5_07	1	Biggest Energy Mistakes Made in Residential Construction
QNA5_08	1	Building High Performance Homes in Hot/Dry Climates
QNA5_09	1	Energy Efficiency Sales Training
QNA5_10	1	House as a System
QNA5_11	1	House as a System Overview

QNA5_12 1 Insulate Right!
QNA5_13 1 Moisture Intrusion
QNA5_14 1 Photovoltaic Distribution Generation
QNA5_15 1 Principles of Energy
QNA5_16 1 Proper Procedures for Charging Air Conditioners and Heat Pumps
QNA5_17 1 See the Heat!
QNA5_18 1 Turn Trash Into Cash!

HVAC

QNA5_19 1 Combined Hydronic Systems Sizing and Design
QNA5_20 1 Compressorless Cooling
QNA5_21 1 Controlled Ventilation
QNA5_22 1 Everything You Wanted to Know About Home Heating, But Were Afraid Ask
QNA5_23 1 Fireplaces: Venting and Performance Issues and Solutions
QNA5_24 1 The Geoexchange Alternative
QNA5_25 1 HVAC Quality Installation
QNA5_26 1 HVAC System Air Flow and Static Pressure Diagnostics
QNA5_27 1 The Truth About Motors, Fans and Pumps

WINDOWS

QNA5_28 1 High Performance Windows

POOLS

QNA5_29 1 Pool Filtration at Half the Cost

REBATE PROGRAM

QNA5_30 1 2003 Home Energy Efficiency Rebate Program
QNA5_31 1 Other (SPECIFY)
QNA5_32 1 Don't know
QNA5_33 1 Refused

(SKIP TO A8)

A6. Have you ever attended a course at PG&E's Energy Training Center in Stockton, California?

QNA6

1 Yes
2 No SKIP TO A9
8 Don't know SKIP TO A9
9 Refused SKIP TO A9

A7A. What was or were the courses?

QNA7A

97 Answer given
98 Don't know
99 Refused

A7B. About when did you take the course?

QNA7B

97 Answer given
98 Don't know
99 Refused

A8. How much time did it take you to travel to the training course?

QNA8

1 Answered in Minutes ONLY
2 Answered in Hours ONLY
3 Answered in Hours and Minutes
8 Don't Know
9 Refused

QNA8A _____ # OF MINUTES.
QNA8B _____ # OF HOURS CONVERT HOURS TO MINUTES
98 Don't know
99 Refused

(SKIP TO A10.)

QNA8MIN Total minutes

A9. Why haven't you taken a course with the Energy Training Center?

QNA9_01	1	Didn't realize courses were offered
QNA9_02	1	Not offered on convenient day of the week
QNA9_03	1	Time periods not convenient
QNA9_04	1	Energy Training Center too far away
QNA9_05	1	No course topic relevant/useful to my job/business
QNA9_06	1	Offered too <u>much</u> information to suit my needs
QNA9_07	1	Offered too <u>little</u> information to suit my needs
QNA9_08	1	<u>Not enough</u> hands-on instruction
QNA9_09	1	<u>Too much</u> hands-on instruction
QNA9_10	1	Company/Trade association rep/HVAC manufacturer/distributor recommended a different course
QNA9_11	1	My company rarely/never offers training
QNA9_12	1	Too expensive
QNA9_13	1	Other (SPECIFY)
QNA9_14	1	Don't know
QNA9_15	1	Refused

A10. If the Energy Training Center had a mobile training center that moved to an area closer to you than Stockton, California, do you think that you would be more likely to take a course?

QNA10

1 Yes
2 No

3 Depends on how close it was to me
8 Don't know
9 Refused

A11. If the Energy Training Center allowed people who attended one of their energy training courses to borrow tools like duct testers, do you think that you would be more likely to take a course there?

QNA11

1 Yes
2 No
3 Depends on what tools they had available
8 Don't know
9 Refused

General Experience With and Needs for Outside Training

G1. How often, if at all, do you or your co-workers receive outside training to increase your job-related knowledge and skills? Would you say …(READ LIST)?

QNG1

1 Multiple times per year
2 About once a year
3 Seldom
4 Never
8 (DO NOT READ) Don't know
9 (DO NOT READ) Refused

G2. Are there any energy-related skills or areas of knowledge that you wish you could receive training on in the next couple of years?

QNG2

1 Yes
2 No
8 Don't know
9 Refused

G3. What energy-related skills or areas of knowledge would you like to learn more about?

QNG3

97 Answer given
98 Don't know
99 Refused

Ideal Course Information Sources, Time Periods and Locations

I1. What sources of information do you or other decision makers at your firm prefer to use to collect information on energy efficiency or on new technologies generally? (DO NOT READ LIST. ENTER ALL THAT APPLY)

QNI1_01	1	Trade journals
QNI1_02	1	Manufacturers reps
QNI1_03	1	Distributors or other sales staff
QNI1_04	1	Seminars or workshops
QNI1_05	1	Others at my company
QNI1_06	1	Colleagues outside my company
QNI1_07	1	Consultants (engineers/architects)
QNI1_08	1	Utility company
QNI1_09	1	Product books/catalogs from manufacturers
QNI1_10	1	Other (SPECIFY)
QNI1_11	1	Don't know
QNI1_12	1	Refused

I2. What would be the best way to inform you or others in your position about future PG&E Energy Training Center courses? (DO NOT READ LIST. ENTER ALL THAT APPLY)

QNI2_01	1	ETC Course Calendar
QNI2_02	1	Utility representative
QNI2_03	1	Information in my utility bill
QNI2_04	1	Brochure
QNI2_05	1	Fax
QNI2_06	1	E-mail
QNI2_07	1	Internet/(CENTER) website
QNI2_08	1	Trade magazine
QNI2_09	1	Professional organizations
QNI2_10	1	Trade show display
QNI2_11	1	Workshop session
QNI2_12	1	Others at my company
QNI2_13	1	Colleague outside my company
QNI2_14	1	Consultants or contractors
QNI2_15	1	Other (SPECIFY)
QNI2_16	1	Don't know
QNI2_17	1	Refused

I3. What day(s) of the week would be best for you to attend a training course? (ENTER ALL THAT APPLY)

QNI3_01	1	Monday
QNI3_02	1	Tuesday
QNI3_03	1	Wednesday
QNI3_04	1	Thursday
QNI3_05	1	Friday
QNI3_06	1	Saturday
QNI3_07	1	Sunday

QNI3_08 1 No particular day
QNI3_09 1 Don't know
QNI3_10 1 Refused

I4. What period of day would be best for you to attend a training course?

QNI4

1 Morning
2 Afternoon
3 Evening
8 Don't know
9 Refused

I5a. If a new workshop were offered on a topic of interest to you, how long a drive would you be willing to take to attend a half-day workshop?

QNI5A

1 Answered in Minutes ONLY
2 Answered in Hours ONLY
3 Answered in Hours and Minutes
8 Don't Know
9 Refused

QNI5AA _____ # OF MINUTES.
QNI5AB _____ # OF HOURS CONVERT HOURS TO MINUTES
98 Don't know
99 Refused

QNI5AMIN **Total minutes**

I5b. A full day workshop?

QNI5B

1 Answered in Minutes ONLY
2 Answered in Hours ONLY
3 Answered in Hours and Minutes
8 Don't Know
9 Refused

QNI5BA _____ # OF MINUTES.
QNI5BB _____ # OF HOURS CONVERT HOURS TO MINUTES
98 Don't know
99 Refused

QNI5BMIN **Total minutes**

Title 24 Sequence

Q1. Are you aware that new changes to California's Title 24 Building Energy Efficiency Standards will be in effect on October 1, 2005?

QNQ1

1	Yes	
2	No	SKIP TO END
8	Don't know	SKIP TO END
9	Refused	SKIP TO END

Q2. On a scale of 1 to 5, where 1 indicates "not at all knowledgeable" and 5 indicates "very knowledgeable," how knowledgeable do you consider yourself to be about the latest Title 24 building standards?

QNQ2

5	Very knowledgeable
4	
3	
2	
1	Not at all knowledgeable
8	Don't know
9	Refused

Q3. Have you taken any courses to learn more about these new Title 24 standards?

QNQ3

1	Yes	
2	No	SKIP TO Q6
8	Don't know	SKIP TO Q6
9	Refused	SKIP TO Q6

Q4. Who was offering this course? (DO NOT READ. ACCEPT MULTIPLE ANSWERS)

QNQ4_01	1	The California Energy Training Center (ETC)
QNQ4_02	1	Sacramento Municipal Utility District (SMUD)
QNQ4_03	1	California Building Industry Institute (CBII)
QNQ4_04	1	Professional/Trade association
QNQ4_05	1	HVAC manufacturer/distributor
QNQ4_06	1	Other (SPECIFY)
QNQ4_07	1	Don't know
QNQ4_08	1	Refused

(IF Q4 DOES NOT = 1, ASK Q5, OTHERWISE SKIP TO Q6)

Q5. What is the reason that you didn't take a course with the California Energy Training Center on the new Title 24 changes? (DO NOT READ. ACCEPT MULTIPLE ANSWERS)

QNQ5_01	1	Didn't realize courses were being offered
QNQ5_02	2	Courses not offered on a convenient day of the week
QNQ5_03	3	Time periods for the courses were not convenient

QNQ5_04	4	The California Energy Training Center is too far away
QNQ5_05	5	No course topic relevant or useful to my job/business
QNQ5_06	6	Courses offered too much information to suit my needs
QNQ5_07	7	Courses offered too little information to suit my needs
QNQ5_08	8	Courses did not have enough hands-on instruction
QNQ5_09	9	Courses had too much hands-on instruction
QNQ5_10	0	My company/trade association rep/HVAC manufacturer/distributor recommended a different course
QNQ5_11	1	My company rarely or never offers training
QNQ5_12	2	The courses were too expensive
QNQ5_13	7	Other (SPECIFY)
QNQ5_14	8	Don't know
QNQ5_15	9	Refused

Q6. Do you plan to take any (IF Q3=1: "more") courses on the new Title 24 standards?

QNQ6

1	Yes	
2	No	SKIP TO Q9
8	Don't know	SKIP TO Q9
9	Refused	SKIP TO Q9

Q7. Who are you likely to take the courses from? (DO NOT READ. ACCEPT MULTIPLE ANSWERS)

QNQ7_01	1	The California Energy Training Center (ETC)
QNQ7_02	1	Sacramento Municipal Utility District (SMUD)
QNQ7_03	1	California Building Industry Institute (CBII)
QNQ7_04	1	Professional/Trade association
QNQ7_05	1	HVAC manufacturer/distributor
QNQ7_06	1	Other (SPECIFY)
QNQ7_07	1	Don't know
QNQ7_08	1	Refused

(IF Q7 DOES NOT =1, ASK Q8, OTHERWISE SKIP TO Q9)

Q8. What is the reason you are not planning to take a course with the California Energy Training Center on the new Title 24 changes? (DO NOT READ. ACCEPT MULTIPLE ANSWERS)

QNQ8_01	1	Didn't realize courses were being offered
QNQ8_02	1	Courses not offered on a convenient day of the week
QNQ8_03	1	Time periods for the courses were not convenient
QNQ8_04	1	The California Energy Training Center is too far away
QNQ8_05	1	No course topic relevant or useful to my job/business
QNQ8_06	1	Courses offered too much information to suit my needs

QNQ8_07	1	Courses offered too little information to suit my needs
QNQ8_08	1	Courses did not have enough hands-on instruction
QNQ8_09	1	Courses had too much hands-on instruction
QNQ8_10	1	My company/trade association rep/HVAC manufacturer/distributor recommended a different course
QNQ8_11	1	My company rarely or never offers training
QNQ8_12	1	The courses were too expensive
QNQ8_13	1	Other (SPECIFY)
QNQ8_14	1	Don't know
QNQ8_15	1	Refused

Q9. Are you currently using any of the new Title 24 standards in your business practices?

QNQ9

1	Yes	SKIP TO END
2	No	
8	Don't know	SKIP TO END
9	Refused	SKIP TO END

Q10. When were you planning to start incorporating the new Title 24 standards in your business practices?

QNQ10

1 In the next six months
2 Later than six months from now, but before the required date (October 1, 2005)
3 When it becomes a requirement (October 1, 2005)
4 My line of business doesn't require me to comply with Title 24 building standards
8 Don't know
9 Refused

Those are all the questions I have for you today. Thank you very much for your time.

D Appendix D: SDGE/SCE Workshop Prospects Study

Hello, I'm calling from ICR, a market research company, on behalf of (UTILITY). Could I please speak to the person who is responsible for…

(IF SDGE: decisions on energy use at your location?)
(IF SCE: decisions on energy and water use at your location? IF TWO DIFFERENT INDIVIDUALS RESPONSIBLE FOR ENERGY AND WATER, ASK FOR THE PERSON RESPONSIBLE FOR WATER DECISIONS)

(SDGE INTRO) Hello, I'm _____, calling from ICR, a market research company. We are calling customers of San Diego Gas and Electric about one of the workshops that they might offer. SDG&E would like to get input from customers like you about how to make their course offerings most useful. This is not a sales call and the input you provide will be used solely to help San Diego Gas & Electric plan its future programs. This survey would take about 10 minutes of your time and we would really like to have your help on this.

(SCE INTRO) Hello, I'm _____, calling from ICR, a market research company. We are calling customers of Southern California Edison Company about water irrigation and energy saving workshops that they offer. Edison would like to get input from customers like you about how to make their course offerings most useful. This is not a sales call and the input you provide will be used solely to help Edison plan its future programs.

(1S1. – 1S3. –SDGE ONLY, SCE SKIP TO 2S1)

1S1. First, let me begin by asking, how many employees are there at your company?

_____ ENTER NUMBER OF EMPLOYEES
DD TERMINATE
RR TERMINATE
(IF 21+ EMPLOYEES, TERMINATE)

1S2. Does your company own the space where you are located, or do you rent or lease it from someone else?

1	Own	SKIP TO A1
2	Rent/lease	TERMINATE
D	Don't know	TERMINATE
R	Refused	TERMINATE

1S3. Is your company responsible for the electricity bill, or are these bills paid by someone else such as a landlord or management company?

1	Pay own utilities	SKIP TO A1
2	Someone else pays utilities	TERMINATE
D	Don't know	TERMINATE
R	Refused	TERMINATE

(2S1 – 2S4 – SCE ONLY)

2S1. First, let me just get a bit of information about your business. Do you irrigate your property or water the lawns or plants on your property?

1	Yes	
2	No	TERMINATE
D	Don't know	TERMINATE
R	Refused	TERMINATE

2S2. What type of business are you in?

1 Farming, agriculture
2 Nursery, garden supply
3 Golf course, country club
4 Public park land/garden/arboretum
5 School/college/university
7 Other (SPECIFY)
D Don't know
R Refused

2S3. How many acres of lawn, turf, crops, or other irrigated land does your facility have, in total?

_____ ENTER NUMBER OF ACRES

DD	Don't know	TERMINATE
RR	Refused	TERMINATE

IF LESS THAN 5 ACRES, TERMINATE

2S4. What are the biggest challenges you are facing right now in the area of irrigation? (ENTER ALL THAT APPLY)

01 Optimizing the amount of water used
02 Paying the water bill/controlling water costs
03 Paying for new irrigation equipment
04 Maintaining existing equipment
05 Getting information about irrigation technologies/options/methods
06 Controlling runoff
07 Complying with state requirements/implementing "good practices" as defined by state
08 Getting information on state requirements

97 Other (SPECIFY)
NN No challenges
DD Don't know
RR Refused

(ASK EVERYONE)

A1. Are you aware that (ENTER CENTER NAME) offers classes on ways to save on your energy costs (IF SCE: and on your irrigation costs)?

1	Yes – aware and have attended classes	SKIP TO A3
2	Yes – aware but have not attended classes	
3	No – not aware of classes	SKIP TO A3
D	Don't know	SKIP TO A3
R	Refused	SKIP TO A3

A2. Why have you not participated in these workshops? (ENTER ALL THAT APPLY)

01 Not interested
02 Never received an announcement
03 Didn't have enough information
04 Scheduling conflict/bad time for us
05 Workshop was too long
06 Cannot leave the business/farm for a workshop
07 Too far away
08 Don't think (UTILITY) is the best source of information on the topic
97 Other (SPECIFY)
DD Don't know
RR Refused

(IF SCE, SKIP TO A3.2)

A3.1. Consider for a moment that you receive an announcement that San Diego Gas and Electric is offering a new workshop on controlling energy costs. On a scale of 1 to 5, where 1 is "not interested at all" and 5 is "very interested," how interested would you be in attending this new workshop, or sending one of your employees to attend?

5 Very interested
4
3 Neutral
2
1 Not interested at all
D Don't know
R Refused

(IF SDGE, SKIP TO A4)

A3.2. Consider for a moment that you receive an announcement that Edison is offering some new workshops which discuss a variety of water management and energy management topics. On a scale of 1 to 5, where 1 is "not interested at all" and 5 is "very interested," how interested would you be in attending…(READ STATEMENT)

5 Very interested
4
3 Neutral
2
1 Not interested at all
D Don't know
R Refused

(ROTATE)

a. a workshop which discusses ways to control your irrigation and energy costs
b. a workshop which discusses methods of compliance with state water management requirements
c. a workshop which discusses the most up-to-date irrigation technologies, including soil moisture sensors
d. a workshop which addresses runoff and groundwater contamination issues

(IF SDGE AND A3.1 = 1, OR IF SCE AND A3.2 a.-d. ALL = 1, SKIP TO INSTRUCTION BEFORE A6.)

A4. Which of the following considerations would be most important in determining whether or not you would go to such a workshop? (READ LIST. ACCEPT ONE ANSWER)

(ROTATE)
1 The cost of the workshop
2 Where it is located or the distance you would have to travel
3 When it is held
4 How much time it requires/how long it is
5 Relevance of the information
7 Other (SPECIFY)
D (DO NOT READ) Don't know
R (DO NOT READ) Refused

A5. In your opinion, what would the workshop need to offer to make it most useful to your company? (PROBE FOR COMPLETE AND SPECIFIC ANSWERS)

1 Answer given
D Don't know
R Refused

(IF SCE, SKIP TO A6a)

A6. If a new workshop were offered that did interest you, how far would you be willing to travel to attend a half-day workshop?

_____ ENTER NUMBER OF MILES
NN Not interested
DD Don't know
RR Refused

(IF SDGE AND A1=1 AND A6 = NN, SKIP TO A13, OTHERWISE SKIP TO A7)

(A6a AND A6b FOR SCE ONLY)

A6a. Edison's AGTAC facility where its workshops are held is in Tulare. Is this close enough that you would consider going to a workshop at that site?

1 Yes
2 No
N Not interested in any workshops SKIP TO A13
D Don't know
R Refused

A6b. If Edison developed a traveling workshop, which came to a facility within ten miles of your location, would that increase the likelihood that you would attend their workshops or send someone else to attend?

1 Yes
2 No
D Don't know
R Refused

A7. What day or days of the week would be best for scheduling a workshop, in your opinion? What about…?

1 Good
2 Bad
D Don't Know
R Refused

a. Monday
b. Tuesday
c. Wednesday
d. Thursday
e. Friday
f. Saturday
g. Sunday

A8. What time of the day would be best? [ENTER ALL MENTIONED.]

1 Breakfast meeting
2 Morning meeting
3 Lunch
4 Afternoon
5 Dinner meeting
6 Evening
D Don't Know
R Refused

A9. Is there a season of the year that would be more or less convenient for you?

1 Good
2 Bad
D Don't Know
R Refused

a. Spring
b. Summer
c. Fall
d. Winter
e. All year round

A10. What would be an appropriate length of time for such a workshop to last?

1 Up to 1 hour
2 1-2 hours
3 Up to half a day
4 Up to one day
5 Two or more days
D Don't Know
R Refused

A11. If (UTILITY) offered its workshops at a trade show or conference that you were attending, would this make it more likely that you would attend their workshop?

1 Yes, more likely to attend
2 Unsure
3 No more likely to attend SKIP TO A13
N Not applicable – do not attend trade shows SKIP TO A13
D Don't Know
R Refused

A12. What trade shows or conferences do you attend?
(RECORD VERBATIM)

1 Answer Given
D Don't Know
R Refused

A13. Are there other means by which you would prefer to get information from (UTILITY), rather than going to workshops? For example, would you prefer an on-line tutorial, DVD, tape, manual, or some other format?

1 On-line tutorial
2 Internet information, general
3 DVD, CD, or computer disc
4 Video tape
5 Manual or brochure
7 Other (SPECIFY) _____
N None of the above
D Don't Know
R Refused

A14. What sources of information do you use to collect information on energy efficiency or on new technologies generally? [DO NOT READ LIST. ENTER ALL THAT APPLY]

01 Trade journals
02 Manufacturers reps
03 Equipment distributors or other sales staff
04 Consultants, engineers, architects
05 Colleagues within company
06 Colleagues outside company/other businesses
07 Seminars or workshops
08 Utility company (SDG&E/SCE)
09 Internet
97 Other [SPECIFY]_____
DD Don't Know
RR Refused

A15. What publications or websites do you use to find useful business information on ways to manage your costs, operate your business effectively, or get information on technology or equipment options?
(RECORD VERBATIM)

1 Answer Given
D Don't Know
R Refused

A16. Are you a member of any local or state business groups or associations?

1 Yes
2 No SKIP TO A18
D Don't know SKIP TO A18
R Refused SKIP TO A18

A17. To what associations do you belong? (ENTER ALL THAT APPLY)

UNIVERSITIES AND COLLEGES
01 Cal Poly, San Luis Obispo
02 Cal State Fresno, Fresno State, Cal. Agricultural Technology Institute
03 UC Davis
04 UC Fresno
05 Community Colleges
REGIONAL IRRIGATION OR WATER ASSOCIATION
06 Cal. Farm Water Coalition
07 Cal. Irrigation Institute
08 Center for Irrigation Technology
09 CIMIS (Cal. Irrigation Management Info System)
10 DWR (Department of Water Resources
11 Department of Conservation
12 State Water Resources Control Board
OTHER
13 Local Water Conservation District
14 Cooperative extension service
15 Farm bureau
16 Other agricultural associations (SPECIFY)
17 Other (SPECIFY)
DD Don't know
RR Refused

A18. What would be the best way to inform you or others in your position about future [CENTER] seminars and workshops? [DO NOT READ. ENTER ALL THAT APPLY]

01 Utility representative
02 Information in my utility bill
03 Brochure
04 Fax
05 E-mail
06 Internet/[CENTER] website
07 Trade magazine
08 Professional organizations
09 Trade show display
97 Other (SPECIFY) _____
DD Don't Know
RR Refused

Those are all the questions I have for you today. Thank you very much for your time. Your answers will help (UTILITY) to design better workshops for its customers in the future.

Appendix E: Questions for Title 24 Experts

1) What is the awareness level among contractors of the new Title 24 regulations? How ready are contractors to respond to the new requirements?

2) Are any builders currently building to the new Title 24 standards?

3) What educational & training options are currently available for builders and HVAC contractors to become familiar with the new Title 24 standards?

4) When do you think most builders and HVAC contractors will become familiar with the new Title 24 requirements?

5) Can training centers like the PG&E Energy Training Center do anything more to get builders and HVAC contractors to become more familiar with the new Title 24 standards?

6) What else could be done to get builders and HVAC contractors to become more familiar with the new Title 24 standards?