

EVALUATION OF THE 1998 NONRESIDENTIAL STANDARD PERFORMANCE CONTRACT PROGRAM

Volume I FINAL REPORT

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1.1 NSPC PROGRAM

Under the 1998 Nonresidential Standard Performance Contract Program (“NSPC Program” or “Program”), the Program Administrators (Pacific Gas & Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company) offered a fixed price incentive to end users or third-party energy efficiency service providers (EESPs) for measured kilowatt-hour (kWh) energy savings achieved by the installation of an energy efficiency project. The fixed price per kWh, performance measurement protocols, payment terms, and all other operating rules of the Program are specified in a standard contract. The role of the Program Administrators is to manage the Program in a fair and nondiscriminatory manner, promote the Program, educate customers and EESPs on the Program, and enter into contracts with applicants to pay for measured energy savings. There are a number of important milestones that must be completed as part of the project approval process in the Program. Readers unfamiliar with these milestones and other implementation details should review Appendix A of this report, which provides a description of the 1998 NSPC Program requirements.

1.2 POLICY CONTEXT AND NSPC PROGRAM OBJECTIVES

There are several important policy-related backdrops to this evaluation. First and foremost, it is important to highlight that the public-policy nature of regulations justifying intervention in energy efficiency markets has changed in California in recent years and that the public-policy-based choices of different means of intervention have reflected this change. A summary of the high-level changes in California’s energy-efficiency program policies is provided in Section 2 of this report. The Program design itself is an explicit part of the changed nature of publicly-funded intervention, and 1998 is the first year in which the Program has been implemented in California.

The fact that the NSPC Program was designed during the regulatory transition described above is reflected in the fact that the Program has both resource acquisition *and* market transformation-related objectives. This is because the policy objectives for 1998 required that the overall portfolio of 1998 programs be cost-effective from a societal perspective *and* incorporate market transformation objectives. Since the Program was the largest single program in the portfolio, it was important to the Program’s developers and the utility administrators that it provide a cost-effective means of capturing near-term energy savings.¹ At the same time, the Program was expected to contribute to the market transformation-related policy objectives. There is, however, no consensus around what constitutes the specific market transformation goals of the Program. In the course of conducting this evaluation, several possible goals were developed as part of the development of a program theory. These are presented in Section 4 of this report.

¹ This is because utilities had to propose a cost-effective portfolio of programs in aggregate in 1998 as a threshold condition. The NSPC program was intended to be a key contributor to meeting that objective.

1.3 OVERALL EVALUATION OBJECTIVES AND SCOPE

This evaluation study was commissioned by the California Board for Energy Efficiency (CBEE) and managed by Southern California Edison Company. The objectives of the evaluation, as stated in the original request for proposal, are to:

1. Conduct a **statewide assessment of the baseline characteristics** of the current nonresidential retrofit market for performance contracting and *related energy-efficiency* services.
2. Conduct a broad **statewide process, market, and impact evaluation** of the **1998** Nonresidential Standard Performance Contract Programs, focused on:
 - reviewing and integrating utility tracking data,
 - characterizing how the Program actually worked in 1998,
 - refining hypotheses regarding the potential market effects of the Program, and
 - providing timely feedback for use in improving future NSPC Programs.

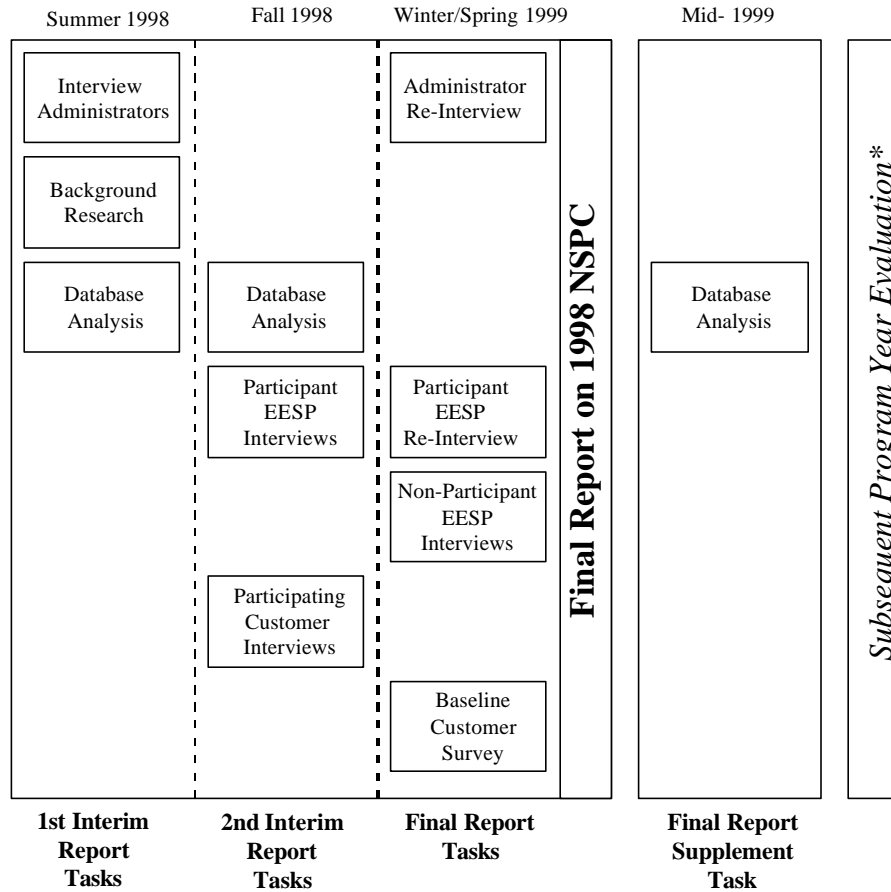
Although the NSPC Program objectives are both resource acquisition and market transformation oriented, this evaluation focuses more on the latter than on the former. There are several reasons for this. First, because less than 5 percent of the 1998 program year (PY98) projects were installed at the time of this writing, the information necessary for an ex post summary of savings and costs is not yet available. Second, the Program design does not require a program-wide impact evaluation of gross energy savings because the project-specific M&V requirements of the Program will produce these data one and two years after projects have been installed. For these reasons, under the original objectives of this evaluation, the bulk of our resources were focused on process evaluation issues, analysis of near-term market effects, and a preliminary analysis of the net-to-gross ratio for the Program. *With the majority of projects still awaiting installation, it is not yet possible to provide a complete assessment of the energy savings and cost-effectiveness of the Program. An analysis of savings and cost-effectiveness is planned for later in 1999 when a final statewide integration of the utilities' 1998 program tracking databases will be conducted.*

Two other aspects of this scope are also important to keep in mind. First, this evaluation provides evaluation results *only* for PY98. Any future program years are to be addressed through subsequent evaluations. Second, establishment of a baseline for the nonresidential market for performance contracting and related energy-efficiency services is an equally critical objective of this project. Fulfillment of this latter objective provides the foundation upon which future evaluations will be based, since these future evaluations will look to observe longitudinal *differences* in key benchmark indicators to analyze market changes, market effects, and the durability of any effects observed and attributed to the Program intervention.

This final report is the third of four reports to be prepared as part of the evaluation of the 1998 Nonresidential Standard Performance Contract Programs in California. An overview of the key elements of this Program study is shown in Figure 1-1. This figure shows a simple representation of the elements (as tasks) of this final report and the previous interim reports, including where

these elements fit within the overall study. This final report includes work provided in the first and second interim reports as well as the results of additional tasks completed after the second interim report. A supplement to this final report will be prepared later in 1999 that will focus on results obtained from conducting a final analysis and integration of the Program Administrators' 1998 NSPC Program tracking databases.

**Figure 1-1
Summary of Research Tasks and Reports for the 1998 NSPC Program Evaluation and Baseline Study**



*Post-1998 evaluation plans have not yet been established for the NSPC Program. It is likely, however, that the CBEE will address this issue as part of its 1999 MA&E Planning Process.

1.4 PROGRAM IMPACTS

As mentioned above, it is not within the scope of this evaluation to conduct an independent assessment of the gross energy savings of the 1998 NSPC Program because gross savings are verified by participants on a site-by-site basis as part of the Program requirements. What is within the scope of this evaluation is the development of an integrated analysis of program accomplishments using the three Program Administrators' Program tracking databases. In addition, it is also within the scope of this evaluation to develop an estimate of the net-to-gross ratio for the Program.

Separate Program tracking databases are maintained by each of the Program Administrators. Extracts from each of the three Program tracking databases must be combined to allow for a summary of the Program activity at an aggregate, statewide level. In 1998, each utility database existed in a different format and was updated according to different protocols. As a result, developing an integrated statewide database during the Program implementation process presented formidable challenges to the evaluation team. Although we have made every effort to reconcile differences in definitions and a variety of other discrepancies between the data sets, we must caveat the information presented by saying that we can not completely warranty its absolute accuracy. Two analyses of the utility databases were conducted during this evaluation, one in Summer 1998 and the other in Fall 1998. Results from the Fall 1998 analysis are presented in Table 1-1. Note that this analysis is now somewhat dated and will be conducted again as a supplement to this final report.² Because changes have occurred and are still occurring with respect to project cancellations, new approvals, and changes in project characteristics, the final population characteristics for the Program will differ from those presented in Table 1-1.

Table 1-1
Summary of Statewide NSPC Program Activity as of Fall 1998

Activity Level	Total
Total unique customers	92
Total number of applications	144
Total number of sites	605
Total unique third-party Energy-Efficiency Service Providers	26
Total incentives funds committed	\$33.8 million
Total Annual Savings associated with applications with accepted BPAs	231,016 MWh
Total amount of incentives on wait list	\$1.7 million

As a result of surveys conducted with participating end users in Fall 1998, an initial estimate of the net-to-gross ratio for the Program was developed. Estimates indicate that slightly less than half of the projects associated with the Program are likely to have occurred anyway (i.e., without the Program). The estimated net-to-gross ratio is 0.53. It is estimated that customers who used third-party EESPs as their program sponsor have a higher net-to-gross ratio than do those customers who are their own application sponsors (0.64 versus 0.38).

Note that, in order to calculate the cost-effectiveness of the 1998 NSPC Program from a total resource cost perspective, it is necessary to estimate the incremental measure costs associated

² Since the statewide data integration requires a significant amount of painstaking work, a decision was made by the research team to wait to conduct a final update until most or all of the projects have at least made it through the Detailed Project Application (DPA) approval milestone. This is because conducting a statewide integration and update now would only result in another data set for which a large number of projects remain uncertain since they have not had DPAs approved as of this writing.

with each of the Program's projects. At the time of this writing, this information is not yet available from all of the Program Administrators.³

Based on the information presented above, we make the following observations with respect to the resource-acquisition objective of the Program:

- The Program has generated a large pool of potential gross energy savings as indicated by the 231 GWh associated with funding commitments made as of Fall 1998. There was strong demand for participation in the Program as indicated by the full subscription of funds. If the original cost-effectiveness assumptions for the Program are borne out, this strong demand increases the likelihood that the Program will make a contribution to the objective of achieving a cost-effective portfolio of programs for 1998.
- There appears to be significant amount of savings from non-lighting projects. An indication of this is the fact that the average incentive amount was \$0.15 per kWh.⁴
- Net resource acquisition is likely to be moderate based on our initial estimate of the net-to-gross ratio of 0.53 for the 1998 Program.

Lastly, an approximate estimate of the amount of *incremental* EESP business generated via the 1998 NSPC Program can be made by combining several of the research results presented in the body of this report. Based on this information, we estimate that the Program led to an approximately 10 percent increase in the annual market for performance contracting in California (see Section 3.2 for estimation process).

1.5 OVERALL PROCESS AND MARKET ASSESSMENT OF THE 1998 PROGRAM

1.5.1 Use of Theory-Based Evaluation

One of the first tasks of this study was to develop initial program theories and hypotheses that could be used to form the basis of the market effects component of our evaluation. Theory-based evaluation is a broad descriptor of an evaluation approach that has been used in a number of policy fields for some time. The idea behind theory-based evaluation (TBE) is that program interventions should be analyzed with respect to an expected, phased sequence of causes and effects. Rather than simply waiting many years to evaluate whether the final outcome of a particular program is achieved, TBE emphasizes early and ongoing assessments that focus on whether the expected sequence of events is occurring.

Theory-based evaluation provides a critical framework to evaluation of programs that seek to cause lasting structural changes in social or economic systems. The first lesson of TBE is that a useful evaluation must be fully informed by the causal theory that underlies the program intervention. In particular, for this Program evaluating a detailed exploration of program theories

³ Another determination of whether the information required for the benefit-cost analysis is available will be made as part of the final analysis of the utility databases to be conducted as a supplement to this report later in 1999.

⁴ Incentive levels for the 1998 NSPC Program were \$0.075 for lighting measures, \$0.21 for HVAC and refrigeration, and \$0.11 for other.

was necessary to inform development of data collection instruments, to establish appropriate baseline benchmarks, and to provide a framework for assessing both short- and long-term market effects. Included in our program theory are analyses of which market barriers are likely to be addressed by the Program as designed, development of detailed market feedback and market influence diagrams, assessment of what market effects could be hypothesized to occur as a result of the Program, and development of specific market indicators that could be measured initially and over time to determine whether the Program was generating the expected sequence of events. Our program theory is presented in Section 4 of this report.

1.5.2 Near-Term Market Effects and Process-Related Results

Based on the information and evidence collected to date during this evaluation, our overall assessment of the market transformation and process-related aspects of the 1998 NSPC Program is mixed. There are a number of areas of concern that raise questions as to whether the Program, as designed and executed for the 1998 program year, is likely to lead to the kinds of sustainable market effects envisioned by the CPUC's policy rules for energy-efficiency programs.

The overall weight of the evidence collected to date indicates that the 1998 program is generating few near-term market effects. The strength of the evidence available to date in support of the hypotheses is very limited. There are several important caveats to this assessment that are enumerated in Sections 3 and 10 of this report. Principally, it is important to keep in mind that this assessment is being made *very early in the Program intervention process*. In many cases *primary data collection occurred prior to participants completing one or more important program milestones* such as approval of Detailed Project Applications, Project Installation Reports, and first-year M&V Reports. In addition, this may be the first program that has been subject to such vigorous first-year evaluation of near-term market effects. Thus, it is difficult to compare how well the 1998 NSPC Program is performing on a relative basis since other programs have not been subjected to similar evaluation.

A summary of our assessment of the near-term market effects of the Program is provided in Table 1-2 (the detailed analyses in support of these assessments are provided in Section 10 of this report). As indicated in the table, the case in support of the supply-side hypotheses is currently weak for five of the six hypotheses. On the end-user side, the strength of the evidence is conservatively rated as "not applicable" for five of the six hypotheses because longitudinal data does not exist. As discussed in Sections 3 and 10, the characteristics of 1998 end-user participants limits the degree to which market effects can occur among this cohort under even the best case scenario. This is because 1998 end-user participants were generally representative of the most energy-efficiency-oriented customers in the non-residential population and therefore those least in need of program intervention.

The near-term assessment of the 1998 NSPC Program is that it has resulted in minimal market effects *to date*. Again, the caveats above apply to this conclusion as well as the important fact that program implementation for 1998 is still in progress and the fact that important re-measurements of the baseline end user, participant end user, and participant and non-participant EESP indicators need to be made in the future. The fact that there is minimal evidence for changes in EESP

practices (EESP Hypotheses 1 through 3) attributable to the Program is of strong concern because, according to the program theory, these changes are first-order effects that are necessary to engender a number of the other hypotheses. In addition, these first-order EESP changes are critical to the sustainability of the hypothesized effects. Thus, the fact that the evidence to date for these hypotheses is weak seriously jeopardizes the plausibility of the overall program theory.

Table 1-2
Summary of Near-Term Market Effects Assessment of the 1998 NSPC

Hypotheses	Extent of Evidence to Date	Strength of Evidence to Date
EESPS		
1. Development of improved marketing and sales skills	Limited to baseline	Weak
2. Changes in business strategies	Moderate	Weak
3. Energy-efficiency product and service innovation	Weak	Weak
4. Changes in breadth and depth of EESP industry	Weak	Weak
5. Improved M&V Capabilities	Moderate	Moderate
6. Increased interest in the importance and viability of performance contracting as a long-term business strategy	Moderate	Weak
CUSTOMER/END USER		
1. Improved confidence in EESP as credible energy-efficiency service provider	Limited to baseline	N/A
2. Increased confidence in measure savings	Limited to baseline	N/A
3. Increased awareness and knowledge of the benefits of non-lighting energy-efficiency	Limited to baseline	N/A
4. Increased role of energy-efficiency in energy-related procurement practices	Moderate	Weak
5. Increased demand for EE products and services, especially non-lighting	Limited to baseline	N/A
6. Increased knowledge and awareness of performance contracting	Limited to baseline	N/A
OVERALL FOR PROGRAM	Limited to Moderate	Weak

1.5.3 Process-Related Results

There are several issues related to the 1998 NSPC Program requirements and program implementation process about which many stakeholders have strong concerns:

- The DPA approval process is perceived to be too long. One year after the Program began, a large percentage of DPAs still had not been approved and some had not been submitted by EESPs for approval. EESPs and administrators disagree over why approval of DPAs has extended beyond the initial 45-day goal.
- M&V requirements are considered too expensive and out of proportion by many EESPs.
- There are a number of general concerns over whether the Program process is adequately consistent with and flexible enough to meet evolving market needs, trends, and practices.

At the same time, there are several key accomplishments that should be noted, particularly given that this was a fairly large program to implement for its first year:

- Startup and implementation were accomplished without any fatal flaws
- Participation was spread among a number of EESPs, none of whom dominated
- M&V standards were communicated via the Program to end users and EESPs
- Most participants supported the end-use incentive approach

Another process-related accomplishment of the NSPC Program was the CBEE's inclusion of a formal process for assessing and improving the Program for PY99, including this evaluation. Many participants, especially EESPs, appreciated the opportunity to express their opinions about the Program.

Participants' Perspectives Tend to Vary by Segment

Another perspective on the Program can be obtained by considering the four unique types of participants in the 1998 Program: EESPs that are traditional ESCOs, EESPs that are not traditional ESCOs, customers that sponsored their own applications, and customers that used third-party EESPs to sponsor their applications. There is some evidence that the perspectives of these four segments differ with respect to the Program's M&V and DPA reporting requirements. Traditional ESCOs tend to be more accepting of the Program's M&V requirements because they are already familiar with M&V. Conversely, non-ESCOs such as A&E firms do like the Program requirements because they have not done as much M&V in the past and are accustomed to traditional rebate programs which have fewer requirements. Customers that sponsored their own Program applications are also more likely to object to the process if they find implementing the M&V requirements more difficult than they anticipated, an outcome which may be contributed to by their lack of experience with M&V. Lastly, customers that use third-party EESPs as their sponsors generally complain least about the Program requirements because the EESP handles these issues for them.

Program Outreach and Mix of EESPs

The NSPC Program outreach efforts in 1998 were effective in generating sufficient demand for the Program to commit most of the program year funding. There were few EESPs, however, that were characteristic of the *average* contracting, engineering, or O&M firm in California. Reaching the hundreds to thousands of these types of firms in the state could be an important step toward increasing activity among the small and medium end user customers who were mostly absent from the 1998 NSPC Program.

1.6 SUMMARY OF BASELINE MARKET CHARACTERISTICS

Baseline market characteristics were developed from the following primary data collection activities conducted for this evaluation: surveys of representative samples of end users in California and the rest of the United States, interviews with end-user participants in the 1998 NSPC Program, and interviews with participant and non-participant EESPs. There is a wealth of

information from these primary research activities provided in Sections 5 through 7 of this report. Some of the more important NSPC-related baseline characteristics are provided below:

Baseline End-User Results

- End-user awareness and understanding of performance contracting is, on average, moderate. Large customers are much more aware and knowledgeable than average customers.
- About one-fourth of the market received performance contracting offers over the past two years. Net two-year penetration of accepted offers was 3.5%.
- No firm appears to dominate the performance contracting industry, either nationally or in California. The market is characterized by diffusion among service providers.
- Energy efficiency services are widely marketed to larger firms in California.
- Four firms appear to have captured the majority of the nonresidential direct access market. Inclusion of efficiency offers does not yet appear to be an important consideration in most end users' choice of electricity provider.
- Utilities are considered the most credible source of efficiency-related information. Utilities were the overwhelming choice of who customers would "call first" with efficiency-related questions.
- No major systematic differences appear between the California and non-California markets with respect to self-reported knowledge of opportunities or barriers to efficiency.
- Awareness of the NSPC Program in 1998 was low. Only 16% of customers (energy weighted basis) were aware of the 1998 NSPC Program. Program awareness varied by size from 6% for the smallest to 40% for the largest size group.

Participant End-User Results

- Participants were found to be mostly large, sophisticated customers.
- Compared to the average customer in the California market, participants already exhibit many more of the organizational practices and knowledge levels associated with rational energy-related decision making.
- Most participants already actively improve their energy efficiency and have previously participated in energy-efficiency programs.
- Our estimates indicate that slightly less than half of the projects associated with the Program are likely to have occurred anyway (i.e., without the Program). The net-to-gross ratio is 0.53. Non-sponsors have a higher ratio than Self-sponsors (0.64 versus 0.38).
- Non-sponsor customers were more likely than self-sponsors to report that third-party firms played a significant role in their decision to implement the NSPC Program projects.
- The most common type of contract between participating customers and EESPs is fee-for-service (61%), followed by energy performance contracts (21%), and "other" (15%).

Third-Party Energy-Efficiency Service Provider (EESP) Interview Results

- Participant EESPs are diverse, but are represented more by traditional ESCOs and retail energy service providers than by contractors and engineering design firms.
- Performance contracting is important but not dominant as a contracting product. Overall, there is a great deal of ambiguity regarding the future of performance contracting among EESPs.
- Respondents indicated there were few market impacts from the Program to date.
- The overall level of interest in Participating in the 1999 Program is limited among non-participant EESPs.
- Most 1998 participants plan to participate in PY99, but additional changes are desired beyond those already made for PY99.

1.7 RECOMMENDATIONS

The recommendations presented below were developed principally as a result of our near-term market effects and process-related analyses. These recommendations are intended to suggest ways in which the Program might be improved or modified with respect to the achievement of market transformation-related objectives, without compromising the resource-acquisition objective of the Program. The recommendations are not intended to provide specific program design details, but rather to suggest general areas of improvement upon which we believe policy-makers and Program designers should focus their efforts. Although a few of the recommendations made here were partially addressed by the CBEE in its PY99 advice filing,⁵ they are included here to underscore their importance. The program recommendations are to:

- *Clarify which specific EESP changes the Program seeks to induce and develop Program mechanisms that are more directly tied to initiating these specific changes*
- *Continue efforts to change the composition of end-user Participants; future Participants should be more representative of average customers to increase the likelihood of generating market effects*
- *Reassess the role of performance contracting within the NSPC Program's objectives, particularly with respect to M&V requirements*
- *Expand the diversity of EESP Participants*
- *Continue efforts to reduce perceived and actual costs of Program participation*

These recommendations are discussed, along with recommendations for further NSPC-related research, in Section 11 of this report.

⁵ Recommendations of the California Board for Energy Efficiency on 1999 Programs and Budgets, Institutional and Transitional Issues, and Adopted Policy Rules, October 15, 1998.

2.1 SUMMARY OF THE NSPC PROGRAM

Under the 1998 Nonresidential Standard Performance Contract (NSPC) Program, the Program Administrators (Pacific Gas & Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company) offer a fixed price incentive to end users or third-party energy efficiency service providers (EESPs) for measured kilowatt-hour (kWh) energy savings achieved by the installation of an energy efficiency project. The fixed price per kWh saved, performance measurement protocols, payment terms, and all other operating rules of the program are specified in a standard contract. The role of the Program Administrator is to manage the program in a fair and nondiscriminatory manner, promote the program, educate customers and EESPs on the program, and enter into contracts with applicants to pay for measured energy savings.

The Standard Performance Contract is a “pay-for-performance” program. With traditional utility rebate programs, the utility pays an incentive directly to its customers based on an estimate of annual savings from a project. However, with the pay-for-performance NSPC Program, the utility pays a variable incentive amount to a third-party EESP, or to a customer acting as their own EESP, based on measured energy savings. The NSPC Program is also different from traditional utility rebate programs in that the total incentive is paid over a two year performance period. During the performance period, the EESP must measure and verify the energy savings actually achieved using a mutually agreed upon measurement protocol. The incentive levels for the 1998 program were as follows:

<u>Measure Type</u>	<u>Price/kWh</u>
Lighting	\$0.075
HVAC&R	\$0.210
Other	\$0.110

Because of the pay-for-performance nature of the NSPC Program, a key requirement for project eligibility is that the savings resulting from the project must be measured in accordance with a project-specific measurement and verification (M&V) plan. The M&V plan must be prepared by the EESP in accordance with the Program Procedures Manual and must be mutually agreed upon by the Program Administrator and the EESP prior to beginning any work on project installation.

In order to qualify for the NSPC Program a project must produce savings of at least 200,000 kWh per year. Two or more projects may be combined, or “aggregated,” to meet this requirement. Aggregated projects must employ the same energy efficiency measures and be installed at similar sites in order to make measurement and verification of multiple projects feasible. The NSPC Program is open to almost any equipment replacement or retrofit project for which the savings can be measured and verified. The project must have a useful life of greater than three years. Eligible

energy efficiency technologies, or “measures” include, but are not limited to, replacement of standard fluorescent lighting with high efficiency fluorescent lighting, installation of variable speed drives on electric motors, installation of lighting controls to reduce lighting operating hours, and replacement of standard efficiency air conditioning equipment with high efficiency equipment. Projects that are not eligible include any power generation project, co-generation, fuel substitution or fuel switching projects, new construction projects and any repair or maintenance project.

There are a number of important milestones that must be completed as part of the NSPC project approval process. Readers unfamiliar with these milestones and other implementation details should review Appendix A, which provides a description of the 1998 NSPC Program requirements.

2.2 POLICY CONTEXT AND NSPC PROGRAM OBJECTIVES

There are several important policy-related backdrops to this evaluation. First and foremost, it is important to highlight that the public-policy nature of regulations justifying intervention in energy efficiency markets has changed in California in recent years and that the public-policy-based choices of different means of intervention have reflected this change. A brief summary of the high-level changes in California’s energy-efficiency program policies is provided below:

1. In the late 1980s, the CA Public Utilities Commission chose to rely on the regulated utilities as the primary agent for acquiring least cost demand-side resource options, in the context of the Integrated Resource Planning (IRP) set of regulations that defined this era (see CPUC Policy Rules that were in effect during 1990-1997).
2. In the early 1990s, the Commission also accepted and supported the notion that it wished to provide support for non-utility providers of energy efficiency products and services by way of DSM bidding programs (see DSM Bidding decisions, and legislative direction to the CPUC to conduct these “experiments”).
3. Within this context, California’s regulated utilities administered and implemented both information and rebate programs. Utility shareholder incentives were often tied to the measured energy savings obtained from rebate programs, which led to an evaluation focus on measuring reductions in energy usage.
4. As part of a broader restructuring process aimed at enabling a competitive energy industry, the CPUC and the legislature changed the nature (objectives and means) of continued intervention in energy efficiency markets. These changes included:
 - (a) the abandonment of IRP and utility-based least-cost planning;
 - (b) a gradual move toward independent administration of energy-efficiency programs;
 - (c) the explicit elevation of a competitive, energy efficiency industry as an objective for achieving energy efficiency goals during this industry transition period; and
 - (d) the explicit support for an NSPC design as an important program design choice for supporting the development of a competitive, energy efficiency industry of providers of products and services.

As noted in the last item above, the NSPC Program design itself is an explicit part of the changed nature of publicly-funded intervention. 1998 represents the first year in which the Program has been implemented in California.

The fact that the NSPC Program was designed during the regulatory transition described above is reflected by the fact that the Program has both resource acquisition *and* market transformation-related objectives. This is because the policy objectives for 1998 required that the overall portfolio of 1998 programs be cost-effective from a societal perspective and incorporate market transformation objectives. Since the NSPC was the largest single program in the portfolio, it was important to the Program's developers that it provide a cost-effective means of capturing energy savings.¹ At the same time, the Program was expected to contribute to the market transformation-related policy objectives. There is, however, a lack of consensus around what constitutes the specific market transformation goals of the Program. In the course of conducting this evaluation, we developed several possible goals as part of our development of a program theory, which is presented in Section 4 of this report.

Perhaps the closest thing to a consensus among those involved with designing, approving, and implementing the Program is the general notion that the Program should increase the amount of sustainable business that is conducted between third-party EESPs and end users. As evaluators, we see this as a long-term goal which is best supplemented with short-term, proximate indicators. These more detailed indicators (*objectives* from a planning point-of-view) are needed so that early feedback can be provided on whether the Program is producing the types of initial effects that are consistent with the long-term objective (see Section 4 for detail on these indicators).

2.3 OVERALL EVALUATION OBJECTIVES AND SCOPE

The basic objectives of the evaluation, as stated in the original request for proposal, are as follows:

1. Conduct a **statewide assessment of the baseline characteristics** of the current nonresidential retrofit market for performance contracting and *related energy-efficiency* services.
2. Conduct a broad **statewide process, market, and impact evaluation** of the **1998** Nonresidential Standard Performance Contract Programs, focused on:
 - reviewing and integrating the results of utility tracking, monitoring and measurement activities,
 - characterizing how the programs actually worked in 1998,
 - refining hypotheses regarding the potential supply-side market effects of the programs, and
 - providing timely feedback for use in improving future NSPC Programs.

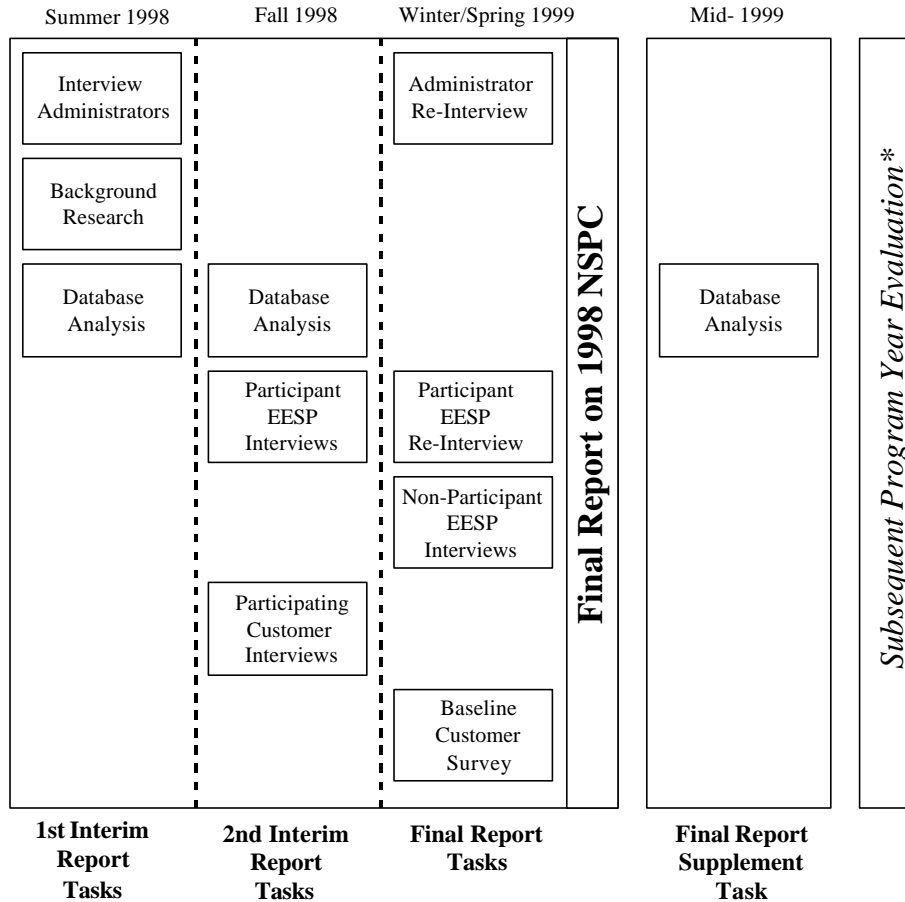
¹ This is because utilities had to propose a cost-effective portfolio of programs in aggregate in 1998 as a threshold condition. The NSPC program was intended to be a key contributor to meeting that objective.

Although the NSPC Program objectives are both resource-acquisition and market-transformation oriented, this evaluation focuses more on the latter than on the former. There are several reasons for this. First, because of the timing of the NSPC project milestones and the first-year focus of this evaluation, less than 5 percent of the PY98 projects were installed at the time of this writing. Thus, the information necessary for an ex post summary of savings and costs is not yet available. Second, the NSPC Program design does not require the type of program-wide impact evaluation study that was typically conducted for utility programs with shareholder incentives for years prior to 1998. This is because the project-specific M&V requirements of the Program will produce an ex post estimate of energy savings. These M&V-based savings estimates will not be available, however, until one and two years after the installation of the projects (see Appendix A for project milestone details). For these reasons, under the original objectives of this evaluation, the bulk of our resources were focused on process evaluation issues and analysis of near-term market effects. *With the majority of projects still awaiting installation, it is not yet possible to provide an assessment of the energy savings and cost-effectiveness of the Program. An analysis of savings and cost-effectiveness is planned for later in 1999 when a final statewide integration of the utilities' 1998 program tracking databases will be conducted.* A preliminary analysis of the net-to-gross ratio of the Program is included in the current report because the information for this analysis is based on the decision-making of end users' and could be gathered early in the project development cycle. The net-to-gross analysis results are presented in Section 6 of this report.

Two other aspects of the scope of this evaluation are also important to keep in mind. First, this evaluation provides process and market evaluation results *only* for the 1998 program year. Any future program years are to be addressed through subsequent evaluations. Second, establishment of a baseline of the nonresidential market for performance contracting and related energy-efficiency services is an equally critical objective of this project. This latter objective will provide the foundation upon which future evaluations will be based, since these future evaluations will look to observe longitudinal *differences* in key benchmark indicators in their quest to analyze market changes, market effects, and the durability of any effects observed and attributed to the program intervention.

This final report is the third of four reports to be prepared as part of the evaluation of the 1998 Nonresidential Standard Performance Contract (NSPC) Program in California. An overview of the key elements of this NSPC Program study is shown in Figure 2-1. This figure shows a simple representation of the elements (as tasks) of this final report and the previous interim reports, including where these elements fit within the overall study. This final report includes work provided in the first and second interim reports as well as the results of additional tasks completed after the second interim report. These additional tasks include administrator re-interviews, participant EESP re-interviews, non-participant EESP interviews, and baseline interviews (including California and non-California samples). In this report we present an integrated analysis of the information collected to date. In Table 2-1, we provide an expanded summary of each of the activities shown in the Figure 2-1. A supplement to this final report will be prepared later in 1999 that will focus on results obtained from conducting a final analysis and integration of the Program Administrators' 1998 NSPC Program tracking databases.

Figure 2-1
Summary of Research Tasks and Reports for 1998 NSPC Evaluation and Baseline Study



*Post-1998 evaluation plans have not yet been established for the NSPC. It is likely, however, that the CBEE will address this issue as part of its 1999 MA&E Planning Process.

**Table 2-1
Description of Key Tasks**

NSPC Evaluation and Baseline Study Tasks	Date Conducted	Report
<u>Background Research.</u> Reviewed 1998 NSPC Program designs and existing studies. Interviewed stakeholders toward developing a baseline for the status of markets for performance and working hypotheses regarding the market effects of NSPC programs.	Summer 1998	First Interim Report, August 16, 1998
<u>Initial Interviews with Utility Staff on Program Administration and Outcomes.</u> At the outset of the study, interviewed utility employees to get a good understanding of how the Program was being administered; this was done to determine how modes of administration affect Program outcomes and to identify process- and policy-related issues.	August 1998	Final Report
<u>Synthesize Utility Tracking and Monitoring Results—Initial Summary.</u> Compiled, analyzed and synthesized tracking and monitoring results developed by each utility.	Summer 1998	First Interim Report, August 16, 1998
<u>First Interim Report.</u> Provided a report summarizing the information collected from the background research, including an analysis of the program theory underlying the NSPC Program. Also included a discussion of process- and policy-related issues and an analysis of the characteristics of participant-based data available in the program tracking databases.	August 1998	First Interim Report, August 16, 1998
<u>Initial Interviews With Participant EESPs.</u> Interviewed a sample of EESPs that participated in the 1998 NSPC Program to obtain feedback on process-related issues and collect information that could be used to develop a baseline of existing business practices and characteristics.	September-October 1998	Second Interim Report, November 11, 1998
<u>Initial Interviews With Non-Participant EESPs.</u> Interviewed a sample of EESPs that were <u>not</u> participating in the 1998 NSPC Program to collect comparative information that could be used to develop a baseline of existing business practices and characteristics and ascertain reasons for non-participation.	February 1999	Final Report
<u>Customer Baseline Surveys, California.</u> Surveyed California customers' baseline awareness, knowledge, attitudes, and practices regarding EESPs, performance contracting, and general energy-efficiency related decisions.	Fall-Winter 1998	Final Report
<u>Customer Baseline Surveys, Comparison Area.</u> Administered the same survey developed for CA to a sample drawn from comparison area(s) outside of California, to assess whether any pre-post trends are due to the NSPC Program or to broader trends in the energy efficiency industry.	Fall-Winter 1998	Final Report
<u>Survey Participating Customers.</u> Surveyed a sample of participating customers to assess issues such as free ridership, customer satisfaction, validation of marketing methods reported by EESPs, and the extent to which these marketing methods are addressing perceived market barriers.	October 1998	Second Interim Report, November 11, 1998
<u>Synthesize Utility Tracking and Monitoring Results—Second Summary.</u> Compiled, analyzed and synthesized tracking and monitoring results developed by each utility.	October-November 1998	Second Interim Report, November 11, 1998
<u>Second Interim Report.</u> Produced an interim report with results from interviews with participating customers and EESPs, as well as an update of program tracking data to aid in the design of NSPC programs in 1999.	November 1998	Second Interim November 11, 1998

(continued)

Table 2-1 (continued)
Description of Key Tasks

NSPC Evaluation and Baseline Study Elements	Status	Report
<u>Re-interview EESPs.</u> Interviewed a broad sample of participating EESPs (including reinterviewing previous interviewees) about: (a) the actual marketing approaches they used; (b) any new information regarding Program process issues; and (c) how participation in the NSPC Program affected their business practices, their marketing approach, and their financial health.	March 1999	Final Report
<u>Re-Interview Utility Staff on Program Administration and Outcomes.</u> Obtained updated information on process related issues.	March 1999	Final Report
<u>Synthesize Utility Tracking and Monitoring Results—Final Summary.</u> Compile, analyze and synthesize the <u>final</u> tracking and monitoring results developed by each utility.	To be completed later in 1999	Separate Report Supplement
<u>Produce a Final Report on 1998 NSPC Programs.</u> Produced a complete process evaluation report on the results of the 1998 NSPC Program, drawing on the results of preceding tasks. Issues addressed include: (a) what happened, including issues such as types of EESPs and customers participating, types of measures installed, tracked estimates of savings, and (most importantly) the short-term effects of the program on the business practices and characteristics of participating EESPs; (b) detailed hypotheses regarding the potential market effects of NSPC programs, to be tested in future years; and (c) recommendations for changes to program design for 1999 and future years.	April 1999	Final Report

2.4 GUIDE TO FINAL REPORT

Descriptions of each of the various elements included in this final report are provided below. These descriptions are organized as they appear in the report, by section and appendix.

Volume I: Main Body

- **Section 1: Executive Summary**

The Executive Summary provides a short summary of the evaluation results.

- **Section 2: Introduction**

The introduction includes a discussion of the overall objectives and scope of the project, including task tracking tables and final report guide.

- **Section 3: Integration of Key Findings and Results**

This section provides a more in-depth summary of the evaluation results than that provided in the Executive Summary.

- **Section 4: Program Theories and Hypotheses**

This section contains the program theory analysis that was completed for the first interim report. The work was completed in the initial stages of the project so that it could be used to form the basis of our evaluation. The focus of this program theory section is on the

market assessment portion of our evaluation. Specifically, our goal in this chapter is to explore the ways in which the NSPC Program might lead to causal changes in the marketplace that ultimately result in long-term *market effects*.

- **Section 5: Market Baseline Analysis**

This section includes the results from interviews conducted with a sample of non-residential establishments in California and throughout the country. The purpose of the interviews was to obtain baseline information on topics relating to a variety of establishment and energy efficiency characteristics, behaviors, and attitudes. The objective of this survey is not only to characterize the current market, but also to put in place market indicators that can be re-measured in the future to determine whether any changes have occurred in the marketplace that might be attributable to the NSPC Program or related programs.

- **Section 6: Results from Participating Customers**

In this section, we present responses to a set of structured interviews we conducted with a representative sample of customers that are participating in the 1998 NSPC Program. Topics covered in the interviews include: general characteristics of the participants, decision-making procedures, experience with performance contracting, experience with third-party firms, net-to-gross characteristics, comments on program process issues, and electric supply issues.

- **Section 7: Results from EESP Interviews**

In this section, we present responses to three sets of structured interviews we conducted with participant and non-participant energy-efficiency service providers (EESPs). Two sets of interviews were conducted with participant EESPs, while non-participants were interviewed once. The two sets of participant interviews occurred at different points in the program implementation process. The first-round participant interviews were conducted in September and October of 1998. Re-interviews were then conducted with participant EESPs in early March 1999. The non-participant EESP interviews were conducted in February 1999.

- **Section 8: Results from Interviews with Implementation Staff**

Section 8 contains the results of interviews conducted with program implementation staff. Implementation staff and their technical consultants were interviewed twice. The *first round* of interviews was used to help formulate the policy and process issues and develop the recommendations presented in the First Interim Report² (see Appendix C). The *second round* of interviews were conducted in early March 1999 and address the following issues: how well the Program has worked to date, the Program's achievement of its goals,

² "Evaluation of Nonresidential Standard Performance Contract Program, First Interim Report: Update on Work-in-Progress," prepared by XENERGY Inc. with assistance from SERA for the California Board for Energy Efficiency and Southern California Edison Company, August 16, 1998).

potential Program changes for 1999, perceived market effects, administrative and process issues, and implications for workshops and other outreach efforts.

- **Section 9: Summary of Program Tracking Data**

Section 9 includes the Program tracking data reported on in our Second Interim Report. The information presented in this section is based on data received in late September and early October 1998. The data summary in this section includes: summary of Program activity as of October 1998, Program applicant composition, various subgroup characteristics, statewide participation by end-user segments, and DPA-based cost information.

Because changes are still occurring in the Program with respect to project cancellations, new approvals, and changes in project characteristics, the final population characteristics for the Program will not be analyzed until after this final report is complete. The final statewide tracking data analysis will be published as a supplement to this report.

- **Section 10: Analysis of Preliminary Market Effects**

In this section, we provide a preliminary analysis of the evidence for any near-term market effects of the NSPC Program based on the research conducted to date. We revisit several of the hypotheses developed in the Program Theory section of this report (see Section 4) in order to assess the extent to which postulated changes in the market are or are not occurring as a result of the Program.

- **Section 11: Recommendations**

In this section we present Program recommendations and suggestions for further research.

- **Section 12: List of Sources**

- **Section 13: List of Acronyms**

Volume II: Appendices A through F

- **Appendix A: 1998 NSPC Program Description**

This appendix provides a brief description of the 1998 NSPC Program.

- **Appendix B: Policy Objectives**

Appendix B contains: Excerpts Relevant to Market Assessment Portion of NSPC Evaluation, from *Attachment 2 to Decision 98-04-063, Interim Opinion: Policy Rules and Request For Proposals For Energy Efficiency Program Administrators, April 23, 1998*

- **Appendix C: Preliminary Policy Issues**

The appendix repeats Section 3 of the First Interim Report from August, 1998. This information was intended to provide early feedback to the California Board for Energy Efficiency (CBEE) on both the initial performance of the NSPC Program and the potential

challenges associated with implementing the Program during 1998 and into 1999. This early summary was prepared to aid in the CBEE's PY99 planning process.

- **Appendix D: Review of Sources for Program Theory Development**

Included in this appendix is a listing of sources reviewed during our program theory development. Two primary sources of information were used for initial theories of the market effects of the NSPC Program: written sources, in the form of both published literature and informal memoranda and white papers; and verbal sources, in the form of initial interviews with program designers and administrators.

- **Appendix E: All Survey Instruments**

Full text versions of all survey instruments used in the 1998 NSPC Program Evaluation are included in this appendix. These instruments are:

- ⇒ Baseline Survey
- ⇒ End-User Participant Survey
- ⇒ Participant EESP Survey
- ⇒ Participant EESP Re-Interview
- ⇒ Non-Participant EESP Interview Guide
- ⇒ Utility Interview and Re-Interview Guide

- **Appendix F: Evaluation Methods**

In this section we present a summary of the evaluation approaches utilized.

Volume III: Appendices G and H

- **Appendices G and H: Baseline End User Survey Results**

Presented in Appendices G and H are the results, in tabular format, for all of the questions asked of baseline respondents. The statistics presented here are shown by: energy weight and population weight, market segment and size strata, and California/Non-California.

In this section we provide an overall summary of the results of our evaluation of the 1998 Non-Residential Standard Performance Contract Program (“NSPC Program” or “Program”). This section draws together the findings developed from each of the key research elements of the evaluation. Additional details on the results obtained from each of the major research elements are provided in other sections and appendices of this report. This summary section is organized into the following subsections:

- Policy Context and NSPC Program Objectives
- Program Impacts
- Overall Process and Market Assessment of the 1998 NSPC
 - ⇒ Use of Theory-Based Evaluation Approach
 - ⇒ Assessment of Near-Term Market
 - ⇒ Process-Related Results
- Summary of NSPC-Related Market Baseline and Trends
 - ⇒ Summary of Baseline End User Survey
 - ⇒ Summary of Participant End User Interviews
 - ⇒ Summary of EESP Interviews
- Summary of Recommendations for Further Research
- Summary of Recommendations for Program

3.1 POLICY CONTEXT AND NSPC PROGRAM OBJECTIVES

There are several important policy-related backdrops to this evaluation. First and foremost, it is important to highlight that the public-policy nature of regulations that justify intervention in energy efficiency markets has changed in California in recent years and that the public-policy-based choices of different means of intervention have reflected this change. A summary of the high-level changes in California’s energy-efficiency program policies is provided in Section 2 of this report. The Program design itself is an explicit part of the changed nature of publicly-funded intervention and 1998 is the first year in which the Program has been implemented in California.

The fact that the NSPC Program was designed during the regulatory transition described above is reflected in the fact that the Program has both resource acquisition *and* market transformation-related objectives. This is because the policy objectives for 1998 required that the overall portfolio of 1998 programs be cost-effective from a societal perspective *and* incorporate market transformation objectives. Since the Program was the largest single program in the portfolio, it

was important to the Program's developers and the utility administrators that it provide a cost-effective means of capturing near-term energy savings.¹ At the same time, the Program was expected to contribute to the market transformation-related policy objectives. There is, however, no consensus around what constitutes the specific market transformation goals of the Program. In the course of conducting this evaluation, several possible goals were developed as part of the development of a program theory. These are presented in Section 4 of this report.

Perhaps the closest thing to a consensus among those involved with designing, approving, and implementing the Program is the general notion that the Program should increase the amount of sustainable business that is conducted between third-party EESPs and end users. As evaluators, we see this as a long-term goal which is best supplemented with short-term, proximate indicators. These more detailed indicators (*objectives* from a planning point-of-view) are needed so that early feedback can be provided on whether the Program is producing the types of initial effects that are consistent with the long-term objective (see Section 4 for detail on these indicators).

3.2 PROGRAM IMPACTS

As mentioned above, it is not within the scope of this evaluation to conduct an independent assessment of the gross energy savings of the 1998 NSPC Program because gross savings are verified by participants on a site-by-site basis as part of the Program requirements. What is within the scope of this evaluation is to develop an integrated analysis of program accomplishments using the three Program Administrators' Program tracking databases. In addition, it is also within the scope of this evaluation to develop an estimate of the net-to-gross ratio for the Program.

Separate Program tracking databases are maintained by each of the Program Administrators. Extracts from each of the three Program tracking databases must be combined to allow for a summary of the Program activity at an aggregate, statewide level. In 1998, each utility database existed in a different format and was updated according to different protocols. As a result, developing an integrated statewide database during the Program implementation process presented formidable challenges to the evaluation team. Although we have made every effort to reconcile differences in definitions and a variety of other discrepancies between the data sets, we must caveat the information presented by saying that we can not completely warranty its absolute accuracy. Two analyses of the utility databases were conducted during this evaluation, one in Summer 1998 and the other in Fall 1998. Results from the Fall 1998 analysis are presented in Table 1-1. Note that this analysis is now somewhat dated and will be conducted again as a supplement to this final report.² Because changes have occurred and are still occurring with respect to project cancellations, new approvals, and changes in project characteristics, the final population characteristics for the Program will differ from those presented in Table 1-1.

¹ This is because utilities had to propose a cost-effective portfolio of programs in aggregate in 1998 as a threshold condition. The NSPC program was intended to be a key contributor to meeting that objective.

² Since the statewide data integration requires a significant amount of painstaking work, a decision was made by the research team to wait to conduct a final update until most or all of the projects have at least made it through the Detailed Project Application (DPA) approval milestone. This is because conducting a statewide integration and update now would only result in another data set for which a large number of projects remain uncertain since they have not had DPAs approved as of this writing.

Table 3-1
Summary of Statewide NSPC Program Activity as of Fall 1998

Activity Level	Total
Total unique customers	92
Total number of applications	144
Total number of sites	605
Total unique third-party Energy-Efficiency Service Providers	26
Total incentives funds committed	\$33.8 million
Total Annual Savings associated with applications with accepted BPAs	231,016 MWh
Total amount of incentives on wait list	\$1.7 million

As a result of surveys conducted with participating end users in Fall 1998, an initial estimate of the net-to-gross ratio for the Program was developed. Estimates indicate that slightly less than half of the projects associated with the Program are likely to have occurred anyway (i.e., without the Program). The estimated net-to-gross ratio is 0.53. It is estimated that customers who used third-party EESPs as their program sponsor have a higher net-to-gross ratio than do those customers who are their own application sponsors (0.64 versus 0.38).

Note that in order to calculate the cost-effectiveness of the 1998 NSPC Program from a total resource cost perspective, it is necessary to estimate the incremental measure costs associated with each of the Program's projects. At the time of this writing, this information is not yet available from all of the Program Administrators.³

Based on the information presented above, we make the following observations with respect to the resource-acquisition objective of the Program:

- The Program has generated a large pool of potential gross energy savings as indicated by the 231 GWh associated with funding commitments made as of Fall 1998. There was strong demand for participation in the Program as indicated by the full subscription of funds. If the original cost-effectiveness assumption for the Program are borne out, this strong demand increases the likelihood that the Program will make a contribution to objective of achieving a cost-effective portfolio of programs for 1998.
- There appears to be significant amount of savings from non-lighting projects. An indication of this is the fact that the average incentive amount was \$0.15 per kWh.⁴
- Net resource acquisition is likely to be moderate based on our initial estimate of the net-to-gross ratio of 0.53 for the 1998 Program.

³ Another determination of whether the information required for the benefit-cost analysis is available will be made as part of the final analysis of the utility databases to be conducted as a supplement to this report later in 1999.

⁴ Incentive levels for the 1998 NSPC Program were \$0.075 for lighting measures, \$0.21 for HVAC and refrigeration measures, and \$0.11 for other measures.

Lastly, an approximation of the amount of *incremental* EESP business generated via the 1998 NSPC Program can be made by combining several of the research results presented in the body of this report. In Section 5 of this report (Table 5-10) we estimate the annual pre-Program market for performance contracting in California to be roughly 436 GWh. Multiplying the preliminary net-to-gross ratio for EESP-sponsored projects of 0.64 by the 231 GWh program savings in Table 3-1 produces an estimate of net Program savings of 148 GWh. However, as shown in Section 9 (Table 9-2), third-party EESP sponsors accounted for about 60 percent of the Program incentives applied for, of which, approximately half the contracts with end users were performance contracts (see Table 6-23, Section 6). Thus, the net performance contracting business generated by the Program can be estimated as: $148 \text{ GWh} \times 0.6$ (fraction of EESP-sponsored projects) $\times 0.5$ (fraction of EESP-sponsored projects using performance contracts with end users) = 44 GWh. This figure represents approximately 10 percent of the estimated annual performance contracting market (44 GWh/436 GWh).

3.3 OVERALL PROCESS AND MARKET ASSESSMENT OF THE 1998 NSPC

3.3.1 Use of Theory-Based Evaluation

One of the first tasks of this study was to develop initial program theories and hypotheses that could be used to form the basis of the market effects component of our evaluation. Theory-based evaluation is a broad descriptor of an evaluation approach that has been used in a number of policy fields for some time. The idea behind theory-based evaluation (TBE) is that program interventions should be analyzed with respect to an expected, phased sequence of causes and effects. Rather than simply waiting many years to evaluate whether the final outcome of a particular program is achieved, TBE emphasizes early and ongoing assessments that focus on whether the expected sequence of events is occurring.

Theory-based evaluation provides a critical framework to evaluation of programs that seek to cause lasting structural changes in social or economic systems. The first lesson of TBE is that a useful evaluation must be fully informed by the causal theory that underlies the program intervention. In particular, for this Program evaluation a detailed exploration of program theories was necessary to inform the development of data collection instruments, to establish appropriate baseline benchmarks, and to provide a framework for assessing both short- and long-term market effects. Included in our program theory are analyses of which market barriers are likely to be addressed by the Program as designed, development of detailed market feedback and market influence diagrams, assessment of what market effects could be hypothesized to occur as a result of the Program, and development of specific market indicators that could be measured initially and over time to determine whether the Program was generating the expected sequence of events. Our program theory is presented in its entirety in Section 4 of this report; a portion of which is presented in the subsections that follow.

Excerpt of Program Theory

The program theory was focused on the *market assessment*⁵ portion of our evaluation and, thus, explored the ways in which the NSPC might lead to causal changes in the marketplace that ultimately result in long-term *market effects*.⁶ In developing the initial theories and hypotheses that follow, we also used the *Market Transformation Scoping Study*⁷ as a key source for definitions and analytical frameworks.

Our program theory analysis was driven by our overall perspective on the *big picture* relationships between suppliers and consumers of energy-efficiency products and services. In order for energy-efficient products and services to be self-sustaining in the marketplace, both supply-side and demand-side interests must become aligned with respect to the value of these products and services. On the supply side, it is critical that the products and services are available, that vendors are aware and knowledgeable about them, and that they stock, promote, and specify them in their business interactions with end users. On the demand side, it is equally critical that end users are aware and knowledgeable about the products and services. In addition, most end users must be able to justify their purchases based on some level of analysis or judgment that demonstrates that the incremental costs, if any, are justified based on the monetary value of the energy savings obtained, plus the value of any other non-energy benefits. If the large majority of end users' investment criteria are not met (which could be because a measure is genuinely uneconomic or because the end users' investment criteria are inappropriate or nonexistent), or if end users have significant concerns about the product or service's features, quality, reliability, or other characteristics, then it is unlikely that enough demand for the products and services will occur to create significant self-sustaining markets.

As first steps in our process of further developing the theories and hypotheses necessary for evaluating the NSPC, we drafted a number of diagrams that graphically present the interplay between the variety of market forces, market actors, and interventions relevant to the program. We begin by presenting Figure 3 -1, in which we show the positive causal feedback loops that the program's designers and proponents may seek to engender. This diagram focuses on the big picture relationships between the market actors and administrators. Key aspects of this diagram of which to take note include the following:

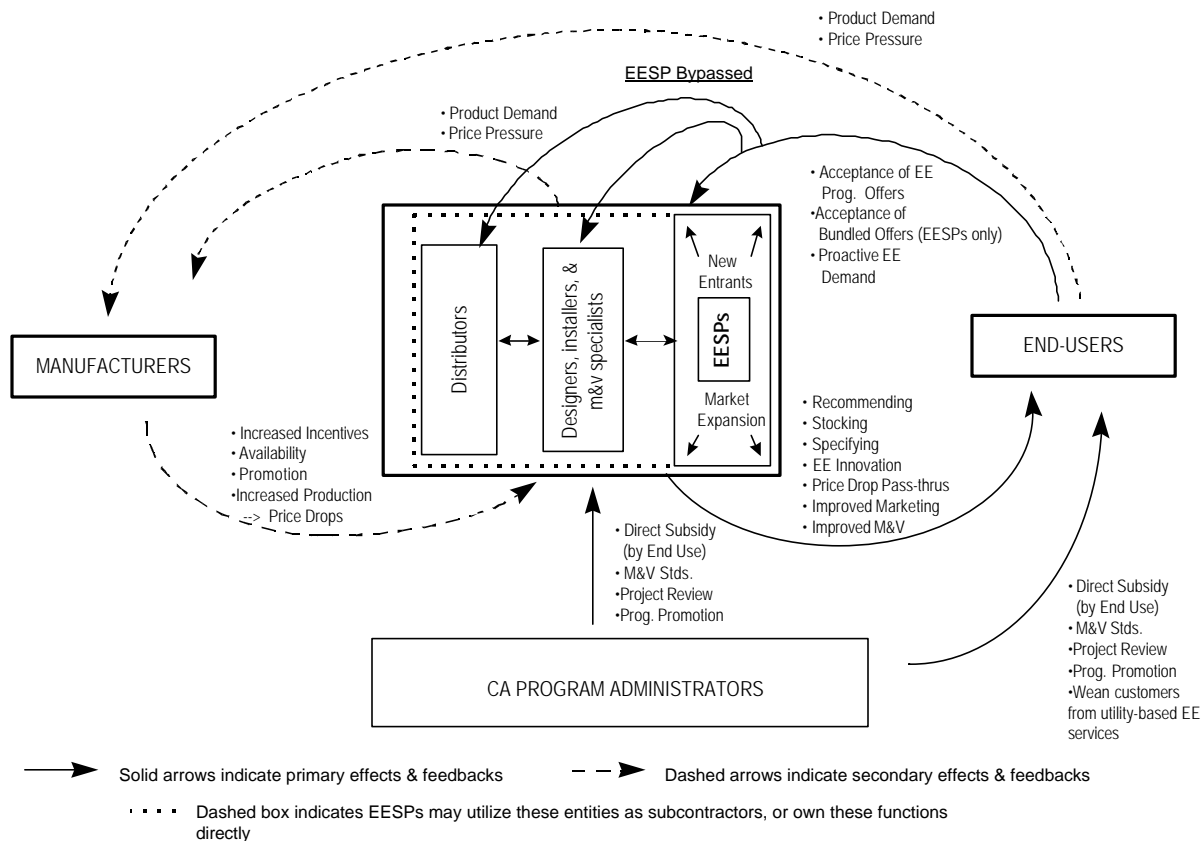
⁵ Under Attachment 2 to Decision 98-04-063, Interim Opinion: Policy Rules and Request For Proposals For Energy Efficiency Program Administrators, April 23, 1998, "market assessment" is defined as follows: Any characteristic of the market for an energy-related product, service, or practice that helps to explain the gap between the actual level of investment in, or practice of, Energy Efficiency and an increased level that would appear to be cost-beneficial.

⁶ The above policy rules define a "market effect" as: A change in the structure or functioning of a market or the behavior of participants in a market that is reflective of an increase in the adoption of Energy-Efficient products, services, or practices and is causally related to Market Interventions.

⁷ Eto, J., Prael, R., and Schlegel, J. (1996) *A Scoping Study on Energy-Efficiency Market Transformation by California Utility DSM Programs*. Berkeley, CA: Lawrence Berkeley National Laboratory.

- The feedback relationships between end users, EESPs, and other supply-side actors (most notably, designers, contractors, distributors, and M&V specialists) are complex and dynamic. For example, any of the following or combination of the following may occur:
 - ⇒ Customers may work with EESPs who provide turnkey efficiency services. In this scenario, the EESP may also procure products and services from downstream supply-side actors,⁸ however, the EESP takes the lead in all dealings with the end user (this is consistent with the traditional ESCO approach).
 - ⇒ Customers may choose to *bypass turnkey EESPs* and work directly with the traditional downstream supply-side actors themselves.

Figure 3-1
Possible Market Feedback Mechanisms Initiated by NSPC Interventions



- A key program hypothesis is that customers respond positively to *program-induced changes in private sector energy efficiency offers and capabilities*, which then initiates a

⁸ Some parties have used the term “upstream” to refer to all activities upstream from end users. We prefer to differentiate end users from supply-side actors, in general, and use the terms upstream and downstream to differentiate within the supply chain itself. Specifically, we use the term “upstream *supply-side actors*” to refer to manufacturers and “downstream *supply-side actors*” to refer to non-manufacturers. Examples of “downstream” supply side actors include wholesale distributors, contractors, designers, EESPs, and retailers.

positively reinforcing cycle of supply and demand for such services. An important indicator of such a positive feedback mechanism would be increases in the size of the market for EESPs' services.

- Another key hypothesized effect of the Program is related to the M&V requirements. Under this hypothesis the Program's M&V requirements lead to a reduction in uncertainty among end users with respect to the energy savings of projects. This reduction in performance uncertainty then stimulates further increases in the demand for energy efficiency.

At the macro-level presented in Figure 3-1, the primary hypothesized effect of the program is to stimulate and reinforce a positive feedback relationship between customers and downstream suppliers of energy-efficiency products and services. One intended aspect of this process is to wean customers from obtaining all of their efficiency services from regulated utilities. An explicit goal of the NSPC is to encourage customers to obtain and procure efficiency services directly from private sector actors. Increased customer demand for private sector efficiency services may then support existing EESPs, encourage new entrants, and lead to greater competition among service providers, reductions in efficiency product and service costs, improved EESP marketing and sales practices, and energy-efficiency product and service innovation. Secondary effects between downstream suppliers and upstream manufacturers of efficient products may result as well. These potential supply-side improvements may then lead to further increases in customer demand for efficiency services. Thus, one possible formulation of the goal of the program is that it should contribute to the creation of a *self-sustaining market* for energy-efficiency products and services that captures *all, or a portion, of* the cost-effective opportunities in end-user facilities.

It is important to recognize that any program intervention may initiate negative as well as positive market feedback mechanisms. Examples of negative market feedbacks that one can hypothesize from the NSPC program include the following:

- Suppliers for whom energy efficiency is not a core competency may respond to the intervention by selling even more aggressively to those customer practices, such as first cost minimization, that favor their products. Rather than responding to the program incentives to promote energy-efficiency products and services, such suppliers might choose to "fight" rather than "switch."
- The program may support EESPs that seek public intervention funds at the expense of EESPs that are already focused on providing efficiency services without subsidy and do not invest resources in seeking such funds. If, for whatever reason, firms that chose *not* to seek such funds had more attributes that would lead to successful promotion of energy-efficiency in the absence of public intervention, it is possible that the program could support less effective providers at the expense of these other firms.
- Lastly, if the availability of program funds increases demand beyond the supply capability of established market players, or simply makes it too easy for new entrants to gain market share, there could be a decrease in the overall quality of EESP services. This could result if the program supported firms with poor business practices that would not otherwise succeed in an unsubsidized market.

Hypothesized Market Effects

The principal interventions of the NSPC are focused on EESPs and end users. The principal direct interventions are the provision of financial incentives for energy savings delivered according to the Program's rules, the requirement that project sponsors engage in a performance contract with the Program Administrators, and the use of standardized M&V protocols for determining the actual savings that result. Though not a requirement, most of the program's designers sought to encourage customers to work with EESPs on projects.⁹ Program stimuli for other market actors are more indirect. To identify measurement indicators for this evaluation, we developed the following hypothesized means by which EESP and end user business practices might be affected by the NSPC program (see Table 4-7 in Section 4 for a complete list of indicators associated with each hypothesis).

Potential EESP Effects

- Development of improved marketing and sales skills.
- Changes in business strategies and new market entrants.
- Energy-efficiency product and service innovation.
- Changes in breadth and depth of EESP industry.
- Improved measurement and verification capabilities.
- Increased interest in the importance and viability of performance contracting as a long-term business strategy.

Potential End User Effects

- Improved confidence in EESPs as credible energy-efficiency service providers.
- Increased confidence in measure savings.
- Increased awareness and knowledge of the benefits of non-lighting energy-efficiency opportunities.
- Increase in role of energy-efficiency in energy-related procurement practices.
- Increased demand for energy-efficiency products and services, especially non-lighting.
- Increased knowledge and awareness of performance contracting.

3.3.2 Near-Term Market Effects and Process-Related Results

In Section 4 of this report, we explore a variety of mechanisms by which the NSPC Program could be theoretically hypothesized to lead to sustainable market effects in the non-residential sector. From the program theory developed, we constructed a number of possible hypotheses of program effects. The hypotheses developed are listed in Table 3-1 and discussed in Section 4. For each of

⁹ It was expected that most of the project sponsors, who must fulfill the NSPC program requirements, would be EESPs. To date, however, a large percentage (roughly half) of sponsors have been end users.

the hypotheses we then created one or more market indicators that could be measured to provide evidence with respect to whether the hypotheses are borne out.

Our complete analysis of the extent to which there is evidence in support of the hypotheses, on a near-term basis, is provided in Section 10 of this report. The introduction to that section provides a number of important caveats to our near-term analysis, which readers are encouraged to review. Briefly, these caveats are that:

- Because the Program has only been in operation for one year, we are looking less for convincing, evidentiary proof of lasting, program-induced changes in the marketplace (which rarely occur so quickly from any new program intervention) and more for whether there are any early indications that any of the hypothesized sequences of events have begun to manifest themselves. Importantly, readers must keep in mind that the 1998 NSPC Program is still being implemented as of this writing. Thus, by definition, some effects may not be manifest since the intervention itself is still in progress.
- We have *longitudinal*¹⁰ results for only two of the market actors involved in the Program to date, namely, participant EESPs and the utility administrators. Both of these groups were interviewed *twice* during this project; first, in late summer and early Fall 1998 and, second, in early March 1999. By design, there are three key market actors for which we have only one set of data at this juncture of the evaluation: the population of California and non-California end users (surveys conducted in November/December 1998), end users that participated in the 1998 program (interviews conducted in October 1998), and EESPs that did not participate in the 1998 program (interviews conducted in February 1999).
- Our assessment of the evidence of near-term market effects is made only with respect to the 1998 NSPC Program.
- We have tried to strike a balance in making our assessment between being conservative and assertive. We recognize the need for some conservatism in our analysis and conclusions because, as previously noted, our evidence covers only a fairly narrow window of time and in many cases addresses only baseline and pre-program characteristics of end users. At the same time, however, our charge on this evaluation has been to provide early and continuing feedback to policy-makers on whether this program is inducing the changes that would be expected based on the program objectives and underlying program theory. Since this is the largest program in the 1998 portfolio, it is especially critical that this evaluation be as assertive and candid as possible.
- Our participant re-interviews were conducted with 14 of the 22 interviewees included in the first-round interviews (all 22 were contacted). Although we believe these 14 adequately represent the diversity of EESPs in the Program, some Program effects may not have been captured.
- It is very important to remember when reviewing our analyses of the information available to date on the hypotheses that we are only able to address these hypotheses using

¹⁰ Longitudinal results refers to results that are measured over time at two or more discrete points in time.

participant data obtained from the 1998 cohorts. Thus, certain aspects of the results of this analysis can not necessarily be generalized to future program years, which may have different types of participant end user and EESP cohorts.

- Finally, this may be the first program that has been subject to such vigorous first-year evaluation of near-term market effects. Thus, it is difficult to compare how well the NSPC Program is affecting the market with other programs for which this type of early assessment has not been done.

Based on the information and evidence collected to date during this evaluation, our overall assessment of the market transformation and process-related aspects of the 1998 NSPC Program is mixed. There are a number of areas of concern that raise questions as to whether the Program, as designed and executed for the 1998 program year, is likely to lead to the kinds of sustainable market effects envisioned by the CPUC's policy rules for energy-efficiency programs.

Within the context of the caveats above, we believe that the overall weight of the evidence collected to date indicates that the 1998 program is generating few near-term market effects.

As summarized in Table 3-1 and discussed in detail in Section 10, the strength of the evidence in support of the hypotheses is very limited. The case in support of the supply-side hypotheses is currently weak for five of the six hypotheses. In addition, in the one case where we have rated the strength of the evidence as moderate (for improved M&V capabilities), we are concerned about whether the capabilities developed to meet the program requirements are sustainable given the level of resistance to these requirements expressed by many EESPs (as reported in Section 7). *The supply-side assessment is based primarily on the self-reports of EESP participants, who themselves indicated the program has yet to influence their business practices.*

On the end-user side, we have conservatively rated the strength of the evidence as “not applicable” for five of the six hypotheses because we have no longitudinal data. Nonetheless, even with only baseline data we were compelled to rate the strength of the evidence as weak for Hypothesis No. 4, *increase in the role of energy-efficiency in energy-related procurement practices*, because the participants already possessed the desired characteristics upon entry into the program; that is, there is virtually no room for the program to produce any significant change among participants because over 90 percent of them already have procurement practices that support rational energy-efficiency decision making. This same phenomenon in which a large portion of participants enter the program with the characteristics associated with affirming the hypothesis occurs for several other end user hypotheses. Although we have conservatively rated these “not applicable” as well, we must point out that the *end-user participants already possess the desired characteristics in proportions much higher than those found among average customers*. This limits the degree to which market effects can occur among the 1998 cohort under even the best case scenario because these participants were generally representative of the most energy-efficiency-oriented customers in the non-residential population and therefore those least in need of program intervention. (Note that the characteristics referred to above are presented in detail in Section 10.3 of this report; examples include knowledge of energy-saving opportunities and past levels of energy-efficiency actions.)

Table 3-1
Summary of Near-Term Market Effects Assessment of the 1998 NSPC

Hypotheses	Extent of Evidence to Date	Strength of Evidence to Date
EESPS		
1. <i>Development of improved marketing and sales skills</i>	Limited to baseline	Weak
2. <i>Changes in business strategies</i>	Moderate	Weak
3. <i>Energy-efficiency product and service innovation</i>	Weak	Weak
4. <i>Changes in breadth and depth of EESP industry</i>	Weak	Weak
5. <i>Improved M&V Capabilities</i>	Moderate	Moderate
6. <i>Increased interest in the importance and viability of performance contracting as a long-term business strategy</i>	Moderate	Weak
CUSTOMER/END USER		
1. <i>Improved confidence in EESP as credible energy-efficiency service provider.</i>	Limited to baseline	N/A
2. <i>Increased confidence in measure savings.</i>	Limited to baseline	N/A
3. <i>Increased awareness and knowledge of the benefits of non-lighting energy-efficiency</i>	Limited to baseline	N/A
4. <i>Increase in role of energy-efficiency in energy-related procurement practices</i>	Moderate	Weak
5. <i>Increased demand for EE products and services, especially non-lighting</i>	Limited to baseline	N/A
6. <i>Increased knowledge and awareness of performance contracting</i>	Limited to baseline	N/A
OVERALL FOR PROGRAM	Limited to Moderate	Weak

The near-term assessment of the 1998 NSPC Program is that it has resulted in minimal market effects *to date*. Again, the caveats above apply to this conclusion as well as the important fact that program implementation for 1998 is still in progress and the fact that important re-measurements of the baseline end user, participant end user, and participant and non-participant EESP indicators need to be made in the future. The fact that there is minimal evidence for changes in EESP practices (EESP Hypotheses 1 through 3) attributable to the Program is of strong concern because, according to the program theory, these changes are first-order effects that are necessary to engender a number of the other hypotheses. In addition, these first-order EESP changes are critical to the sustainability of the hypothesized effects. Thus, the fact that the evidence to date for these hypotheses is weak seriously jeopardizes the plausibility of the overall program theory.

Although we have summarized the strength of the evidence to date for several of the end user hypotheses in Table 3-1 as “not applicable,” this should not be construed as meaning there is no relevant baseline information or that this information is not useful for informing one’s opinion of the Program. We have utilized “not applicable” under the strength column in Table 3-1 for some hypotheses because we do not yet have adequate information to make a strongly defensible

judgment. This is a conservatism that results from our objective of being as factually oriented as possible on the parts of this evaluation that require judgment rather than opinion. We therefore encourage readers to go on beyond this summary assessment and review the details in Section 10 of this report. Each of the individual hypotheses is addressed in Section 10 and readers will find important baseline evidence for many of the hypotheses with “not applicable” under the strength column in Table 3-1. The baseline evidence associated with these hypotheses is critically important to developing an informed opinion about the Program.

3.3.3 Process-Related Results

A number of process and policy issues were raised early in this evaluation in August 1998. These early issues are presented in Appendix C. The purpose of this subsection is to summarize those issues that continued to be emphasized throughout our last round of interviews with EESPs and administrators in our March 1999 interviews. These issues are:

- Length of, and disagreements over, the DPA review process
- Disagreements over M&V requirements
- General concerns over consistency of program process with market trends and practices

The DPA (and overall) approval process is perceived to be too long by EESPs. EESPs and administrators differ markedly in their perspectives on why the DPA approval process has generally taken a good deal longer than the original 45-day target.¹¹ Administrators reported that DPA submittals and approvals were not straightforward. To date, a significant percentage of DPAs involve several iterations between EESPs and Administrators before approval is obtained. From the administrators’ perspective the reason for delays in approval are that many applications are not complete upon first submittal, often have inadequate M&V plans, and sometimes, in cases of multi-site, multi-measure applications, are overly complex and not well organized. From the EESPs’ perspective, the problem is that the process is unnecessarily onerous and that administrators are too particular and subjective in their assessments. Another related issue is that there have been some difficulties encountered by administrators in meeting the DPA approval demands during peak periods when large numbers of DPAs are submitted at around the same time.

There is a general sense, among both parties, that some of the problems are natural outcomes of starting up a new, fairly complex program, and that the process will get smoother and faster over time. In addition, all parties hope that the changes for PY1999 will improve the process as well, though some EESPs do not believe the changes went far enough.

A principal problem with the overall length of the entire process is that the installation of projects may lag significantly with respect to what EESPs and end users expect in comparison with

¹¹ A precise estimate of the average approval time for DPAs is not yet available; however, it appears that it is not uncommon for the process to take twice the target of 45 days. If follow-up interviews are conducted with 1998 end users, as recommended in Section 11 of this report, information can be obtained on whether and to what extent the approval process was perceived as problematic.

“normal” project development cycles.¹² This is, in fact, one of the major reasons why some non-participant EESPs report they did not participate in 1998 and do not plan to in 1999.

M&V requirements are considered too expensive and out of proportion by many EESPs.

Estimates of the costs of the combined M&V and DPA requirements as a percentage of the incentives applied for were provided by nine of the 14 EESP participants re-interviewed in March 1999.¹³ These estimates ranged from roughly five to 50 percent and averaged around 20 percent. As noted elsewhere in this report, because over half of the contractual arrangements between EESPs and customers are fee-for-service (as opposed to performance contracts), many EESPs perceive most of these costs to be incremental to what they would normally have to incur.

A few respondents stated that M&V practices similar to those required for the NSPC Program have been adapted for use in other projects. However, the majority of participant (and non-participant) EESPs stated that the M&V requirements were onerous, expensive, and overly complex - especially those associated with lighting measures. There were strong feelings that, at least for lighting, stipulated savings or more simple checks of operating hours and confirmations that the measures were in place should suffice to estimate and verify those savings. Several stated that, even for non-lighting measures, the M&V costs were very expensive and that waiting two years for verification and payment is too long to be compatible with their business.

Program Administrators reported that in many cases submitted M&V plans were unresponsive to the program requirements and, in a few cases, no M&V plan was submitted at all. Program Administrators also stated that situations arose in which applicants did not understand pre-installation monitoring. Administrators report that they have spent some time explaining to applicants why pre-installation monitoring is necessary and how to do it effectively so that it actually provides the appropriate baseline. All three of the Program Administrators noted that there had been a number of complaints from participants regarding the cost of M&V. From the perspective of the administrators, however, they report that it is difficult to determine whether or not these complaints are legitimate. One felt that some applicants would be only be satisfied if there were no questions and applications were accepted as delivered.

There are a number of general concerns over whether the Program process is adequately consistent with and flexible enough to meet evolving market trends and practices. For example, a number of participant EESPs perceive that the Program is designed to benefit companies whose core business follows the traditional ESCO model of performance contracting but does not support other means of providing efficiency services preferred by other types of EESPs. A number of non-participant EESPs expressed similar concerns. In-state non-participant firms that are aware of the program indicate that, in many ways, the program is not compatible

¹² We do not have quantitative data that would allow us to compare the length of time associated with a “normal” project development and the length of time that results through the NSPC, thus, we can only report that this was an opinion shared by many of the EESPs we interviewed.

¹³ Because the M&V period has not begun for most projects, respondents reported some difficulty in making estimates of what the actual M&V costs would be.

with the manner in which they are accustomed to doing business. Issues they cited were uneven communication about the program, concerns about the timing and length of program milestones, and the complexity of the M&V.

Underlying the concerns summarized above is a fairly wide difference of opinion among EESPs about the relative role and importance of performance contracting in the rapidly evolving energy services industry. There is a great deal of ambiguity regarding the future of performance contracting. While some larger firms note that they are pursuing this business area quite actively, others have pulled out and are forging long-term customer relationships through other avenues. Still others state that performance contract is appropriate only for certain niche segments (mostly Institutional) and inappropriate for the majority of the market. The generalized concern is that the Program promotes¹⁴ a business model that many EESPs have considered but eschew for reasons they state are unlikely to be changed by the program.

Lastly, several EESPs believe that simpler programs are more effective. A number of the respondents noted that they had favorable experiences with simpler programs that they felt had been more effective in delivering energy efficiency services to the marketplace. Particularly cited were “express” rebate programs and other programs with less burdensome paperwork and M&V requirements, and consequently, fewer delays. These EESPs believe that the greater complexities associated with the NSPC Program have created impediments to delivering energy efficiency with minimal incremental benefits.

Despite the areas of concern outlined above, there are also several accomplishments that should be noted, particularly given that this was a fairly large program to implement for its first year:

- Startup and implementation were accomplished without any fatal flaws
- Participation was spread among a number of EESPs, none of whom dominated
- M&V standards were communicated via the Program to end users and EESPs
- Most participants’ supported the end-use incentive approach
- Inclusion of a formal process for assessing and improving the Program for PY1999.

Successful startup and implementation accomplished without any fatal flaws. Although facile on the face of it, starting up and delivering a new program of the size and complexity of the NSPC Program is difficult. Despite the concerns and issues raised by participants and non-participants, none can be considered fatal flaws in the implementation of the program. Administrators built off elements of their DSM bidding pilot programs, significantly increased the scope of their efforts, and supplanted elements of other programs with which they had more previous experience.

¹⁴ Whether the Program intentionally or indirectly promotes performance contracting is subject to some debate among stakeholders. Clearly, the Program does not require a performance contract between third-party EESPs and end users; at the same time, it is a performance contract between the applicant and administrator and requires the type of M&V more closely associated with performance contracting than with other types of contractual arrangements. This issue is discussed under our recommendation to clarify the role of performance contracting with respect to the NSPC in Section 11 of this report.

Implementation of the 1998 NSPC Program presented a significant start-up challenge that administrators met within a challenging and changing policy environment.

Participation spread among a number of EESPs, none of whom dominated. As summarized in our Second Interim Report and in Section 9 of this report, the Program attracted a reasonably large number of EESPs. As of Fall 1998, we estimated, based on aggregating the three administrators' tracking data, that there were 26 unique EESPs in the Program. These EESPs included traditional ESCOs, retail energy service providers (who sell electric commodity as well as services), and engineering firms and contractors. Of these 26 firms, the companies in the top five represented 36 percent of the incentives (measured at that time based on accepted BPA applications). No firm captured more than 16 percent of the total program incentives, well below the 30 percent cap single EESPs. These findings indicate there is no market dominance being exercised by any single firm or group of firms within the Program for 1998.

Communication of M&V standards to end users and EESPs. Although we have discussed throughout this evaluation that there are many concerns and disagreements over the Program's M&V requirements, it is also important to recognize that these M&V requirements are being communicated to participants, in one sense, whether they like them or not. To the extent that the administrators and CBEE support the M&V levels and approaches as appropriate and intentionally challenging, executive of these requirements through the give and take of the DPA acceptance process represents the means by which these standards are ultimately communicated to the market. Though it may not be an easy process, the M&V requirements are being conveyed through the Program.

Participants' support for levels and flexibility of end use pricing. When asked to specify the strengths of the Program, the value of the incentives and their flexibility were the features most commonly mentioned by both third-party EESPs and customer interviewees. The majority of the respondents (EESPs and customers) reported that the prices were set appropriately both in terms of level and in terms of their differentiation based on end use.

Inclusion of a formal process for assessing and improving design for PY1999. Although not strictly a program accomplishment per se, we believe that the process for developing feedback on the 1998 Program and incorporating that feedback into the PY1999 Program requirements merits acknowledgment. The CBEE initiated a process, through a subcommittee, of obtaining feedback on the 1998 Program from both this evaluation and directly from stakeholders. This feedback was obtained through a series of data requests and meetings between interested parties. The CBEE subcommittee then assessed the feedback obtained and made a number of changes to the PY1999 Program requirements. These changes included the following:

- The Program was split into two components: one to serve large customers and one to serve small.
- Incentives levels were reduced by approximately 25 percent, while a fixed participation credit was added to the small customer program to increase the relative size of the incentive for the smallest projects.

- The BPA was changed to include audit information, a preliminary M&V plan, and identification of the “ultimate” ownership [*i.e.*, *parent*] of the EESP and customer.
- After approval of BPAs, submittal times for DPAs were reduced to: 45 days for lighting and 100 days for non-lighting.
- New funding level caps were developed of \$0.4 million per customer site within each territory; \$1.5 million statewide for corporate parents and government parents (e.g., state and federal *agencies*); and \$6.0 million for *all* State government and Federal government agencies.
- Administrators were directed to revisit M&V requirements and make improvements.

Although this process was very important and productive one area of improvement upon which the CBEE may want to focus is how to increase feedback from EESPs or prospective EESPs that are not actively involved in the CBEE process of efficiency programs in general. There is a tendency for those firms that benefit most from the program to invest the most time in providing feedback to CBEE on its design. Although this is obviously important and useful, it is equally important to hear the voice of those firms who chose not to participate or are even unaware of the program. This is, we recognize, difficult in practice because these firms by definition are less interested in the process.

Participants’ Perspectives Tend to Vary by Segment

Another perspective on the NSPC Program can be obtained by considering the four unique types of participants in the 1998 NSPC Program: EESPs that are traditional ESCOs, EESPs that are not traditional ESCOs, customers that sponsored their own applications, and customers that used third-party EESPs to sponsor their applications. There is some evidence that the perspectives of these four segments differ with respect to the Program’s M&V and DPA reporting requirements. Traditional ESCOs tend to be more accepting of the Program’s M&V requirements because they are already familiar with M&V. Conversely, non-ESCOs such as A&E firms do like the Program requirements because they have not done as much M&V in the past and are accustomed to traditional rebate programs which have fewer requirements. Customers that sponsored their own NSPC Program applications are also more likely to object to the NSPC process if they find implementing the M&V requirements more difficult than they anticipated, an outcome which may be contributed to by their lack of experience with M&V. Lastly, customers that use third-party EESPs as their sponsors generally complain least about the Program requirements because the EESP handles these issues for them.

Program Outreach and Mix of EESPs

We do not believe the program outreach efforts fall clearly into either the “concerns” or “accomplishments” sections above but do warrant discussion. The outreach efforts in 1998 were obviously effective enough to generate sufficient demand for the program to commit most of the program year funding. Positive aspects of the outreach efforts included the use of websites to provide a variety of program-related information as well as application dispositions. In addition, a number of workshops were held early in the year to promote and explain the program. Near the

end of the year, a set of workshops were held on M&V and aggregation. These accomplishments notwithstanding, we are uncertain as to whether outreach efforts are reaching beyond firms that already focus on energy-efficiency as a core business area or generally follow CBEE -related matters through the CBEE e-mail lists. *There were few firms in the 1998 Program that were characteristic of the average contracting, engineering, or O&M firm in the State. Reaching the hundreds to thousands of these types of firms in the State could be an important step toward increasing activity among the small and medium end user customers who were mostly absent from the 1998 NSPC Program.*

3.4 SUMMARY OF BASELINE MARKET CHARACTERISTICS

In this section we provide summaries of the three key elements of the baseline research conducted during this evaluation: surveys of representative samples of end users in California and the rest of the United States, interviews with end user participants in the 1998 NSPC, and interviews with participant and non-participant EESPs. Note that virtually all of the baseline information presented in this summary and in detail in Sections 5, 6, and 7 of this report was developed with the intention of being re-measured in the future as part of the longitudinal design of this evaluation. The specific questions utilized in our survey instruments were tied directly to measurement indicators presented in Table 4-7 of Section 4 of this report. A great deal of effort went into ensuring the baseline survey instruments provided multiple measurements of the indicators of interest to provide as much information as possible to the process of assessing the validity of the Program hypotheses.

3.4.1 Baseline End User Characteristics

In this subsection, we present a short summary of key results from our surveys conducted with a sample of non-residential establishments in California and throughout the country. The purpose of the surveys was to obtain baseline information on topics relating to a variety of establishment and energy efficiency characteristics, behaviors, and attitudes. A large percentage of the questions asked on these surveys were developed based on the hypotheses and indicators discussed in the Program Theory section of this report (Section 4). The objective of this survey was not only to characterize the current market, but also to put in place market indicators that can be re-measured in the future to determine whether any changes have occurred in the marketplace that might be attributable to the NSPC or related programs. Readers should refer to Section 5 of this report and Appendices G and H to obtain a complete picture of the end user baseline developed for this evaluation.

The customers included in the sample include all nonresidential customers except agricultural. Customers were mapped by primary SIC code into six major sectors. These sectors were selected based on past experience analyzing which segments explain most of the observed variation in customers' decision-making patterns for energy efficiency. The six sectors are: Office, Retail, Institutional, Other Commercial, High Energy Intensity Industrial, and Low Energy Intensity Industrial. Each business type was divided into four size strata (1) small, (2) medium, (3) large, and (4) very large) based on estimated energy usage. The California population frame of interest for this analysis comprises the SCE, SDG&E, and PG&E's service territories. The non-California

comparison sample comprises the entire lower 48 United States with California subtracted. The surveys were administered in November and December of 1998. *A total of 515 California surveys and 499 non-California surveys were conducted. Unless otherwise noted, these are the sample sizes associated with the tables and figures below.*

Key findings from the baseline survey results are summarized in the bullets that follow.

- **End user awareness of performance contracting is moderate.** When weighted by energy use, approximately 30% of CA and 34% of non-CA establishments are aware of energy performance contracting (EPC). The difference is not statistically significant. Awareness levels vary greatly by market sector and size strata. A much smaller number of establishments were able to demonstrate an *understanding of the characteristics* of EPC. On an energy-weighted basis, only 18% of the CA and 20% of the non-CA organizations could identify the defining characteristics of EPC. Not surprising, the larger establishments were much better at accurately defining EPC.

Figure 3-2
Have Heard the Term EPC
Energy Weighted

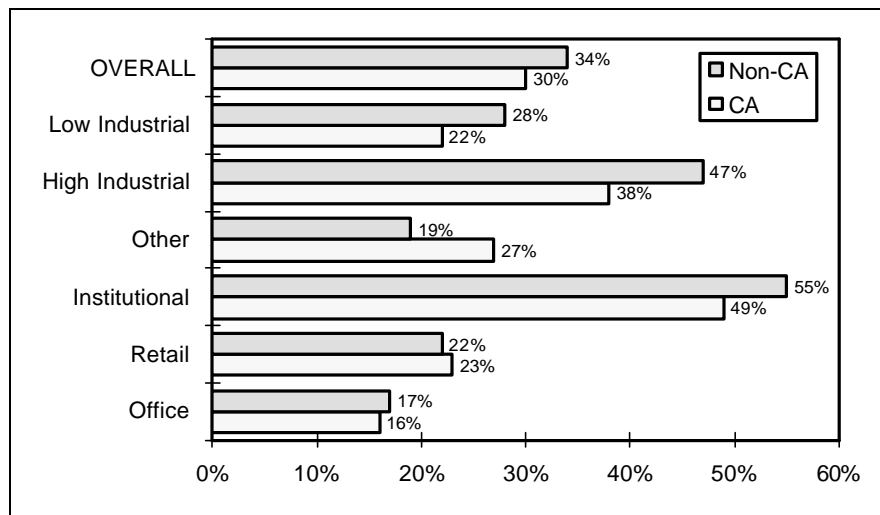
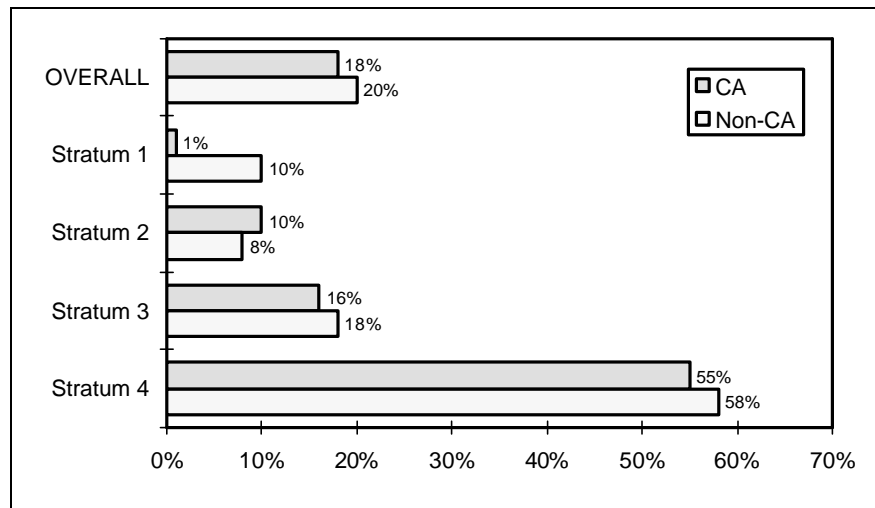


Figure 3-3
Understand Characteristics of EPC
Energy Weighted



- *About one-fourth of the market received performance contracting offers over the past two years. Net two-year penetration of accepted offers was 3.5%. The energy-weighted percentage of customers that report they received at least one EPC offer in the last two years was 27% in CA and 22% in non-CA. The difference is not statistically significant. Strong differences exist between sectors and size strata.*

Table 3-2
Approached by Firms Offering EPC
Population Weight

Market	Population Weighted				ALL	Energy Weighted
	Strata					
	1	2	3	4	ALL	
CA	3%	15%	32%	52%	5%	27%
Non-CA	1%	12%	24%	43%	3%	22%

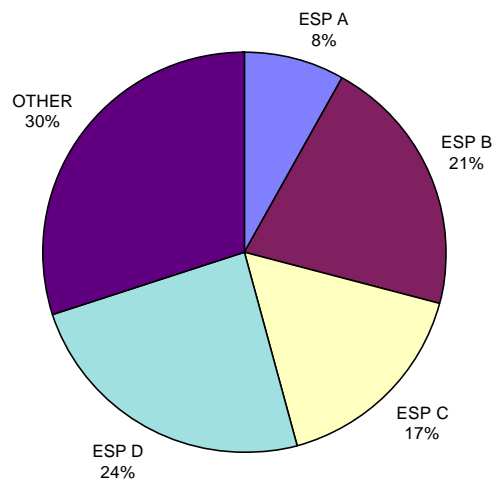
As summarized in Table 3-3, we estimate that the annual size of the performance contracting industry is between \$50 and \$100 million (these are front-loaded figures in that, by definition, ESCOs would typically collect these revenues over a multi-year period). We acknowledge there is considerable uncertainty in these estimates but believe that the bottom-up approach utilized is promising and provides information not previously collected or published on the California market.

Table 3-3
Estimates of Performance Contracting Industry Size in California

Row	Input	Estimate	Source
A	Total NonRes Energy in kWh	103,601,000,000	Sum of UDC C&I Load from DASR Reports Submitted to the CPUC
B	Fraction Approached	27%	Baseline Survey
C	Signed Deal	13%	Baseline Survey
D	Net Fraction Signed last 2 years	3.5%	Row B X Row C
E	Total % Savings per Year	12%	Baseline Survey
F1	Unlevelized (\$) per kWh Saved	\$0.25	Lower range estimate
F2	Unlevelized (\$) per kWh Saved	\$0.50	Higher range estimate
G	Annual kWh Saved	436,367,412	Row A X Row D X Row E
H1	Total Cost for Savings	\$109,091,853	Row F1 X Row G
H2	Total Cost for Savings	\$218,183,706	Row F2 X Row G
I1	Total Cost for Savings/Year	\$54,545,927	Row H1 divided by 2 (years)
I2	Total Cost for Savings/Year	\$109,091,853	Row H2 divided by 2 (years)

- *No firm appears to dominate the performance contracting industry, either nationally or in California.* The market is characterized by diffusion among service providers.
- *Four firms appear to have captured the majority of the non-residential direct access market.* Based on self-reports of the supplier selected, four ESPs account for an estimated 70% market share (energy-weighted). The percentage of establishments in California that report they *switched to a new electricity supplier* varied from 1% for the smallest customers to 31% for the largest size group. These results closely match the population figures reported by the CPUC for Direct Access Service Requests for 1998.

Figure 3-4
Relative ESP Electric Supply Shares
Energy Weighted/California (n = 63)



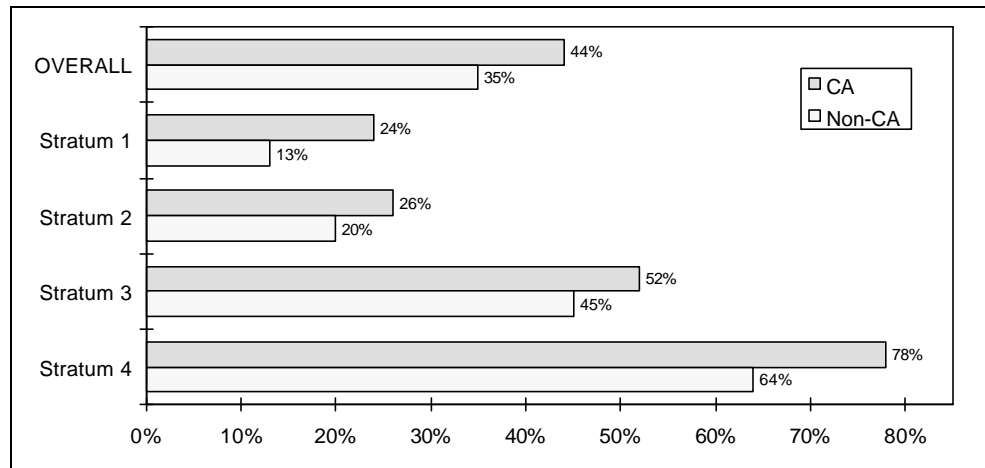
- ***Most customers considered other factors in addition to price in their choice of electricity provider, but energy efficiency services do not yet appear to be a differentiator.*** Customers currently *expect* electricity providers to be knowledgeable and able to provide energy-efficiency services, but this is not a differentiating factor in their final decision.
- ***The CA and non-CA markets are fairly similar on average, but differ by size group.*** The CA and non-CA samples appear to be *fairly similar with respect to several potential indicators* of energy-efficiency behavior, which are shown in the Table 3-4 below. Large customers in California appear to be somewhat more efficiency-oriented, while for the smallest customers the results are reversed (i.e., non-California customers appear to be more efficiency oriented). Possible reasons for the latter result are discussed in Section 5; however, the differences between the CA and non-CA results for Strata 1 are not statistically significant.

Table 3-4
Energy Efficiency Proclivity Summary
Energy Weighted

Indicator	Market	Strata			
		1	2	3	4
Participated in Energy Efficiency Programs in Last 2 Years	CA	12%	27%	43%	74%
	Non-CA	21%	19%	39%	62%
Taken Actions to Reduce Energy Use	CA	41%	50%	65%	95%
	Non-CA	47%	57%	69%	95%
Have Policy for Selecting Energy Efficient Equipment	CA	10%	14%	25%	61%
	Non-CA	23%	15%	22%	38%
Long-Term Investment Analysis Applied to EE Investments	CA	15%	44%	72%	95%
	Non-CA	30%	41%	62%	75%

- **Energy efficiency services are widely marketed to large customers in California.** On an energy-weighted basis, 44% of the CA and 35% of the non-CA markets reported they had been *approached* in the past two years by *companies offering to provide services to improve energy efficiency*. The difference is statistically significant.

Figure 3-5
Offered Energy Efficiency Services by Other Firms in Past 2 Years
Energy Weighted



- **Utilities are considered the most credible source of efficiency-related information.** Respondents reported that electric utilities were *the most credible sources* of efficiency-related information and were the overwhelming choice of who they would “call first” with efficiency-related questions. ESCOs scored much lower on the credibility rating and were rarely identified as the entity to call first.

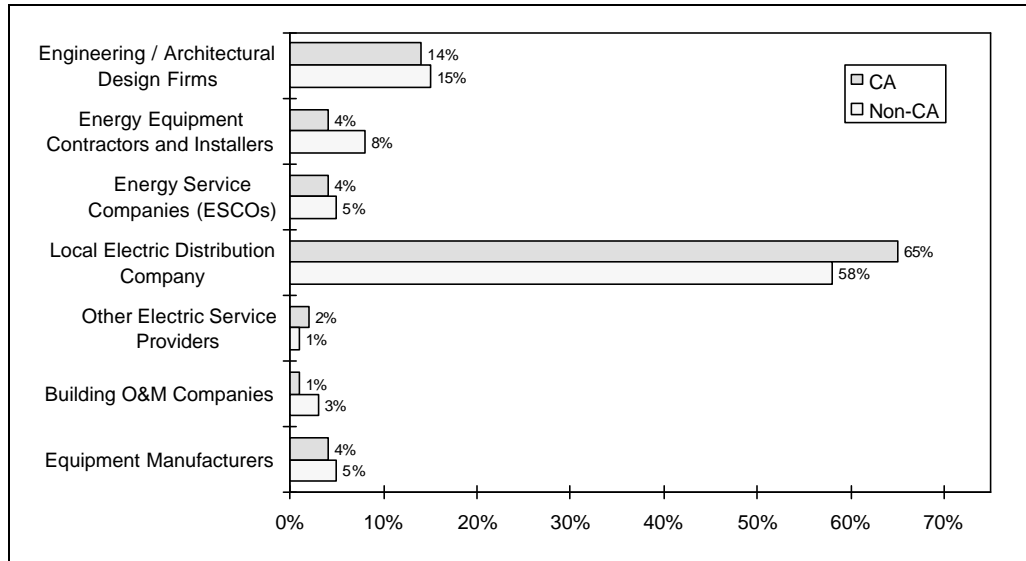
Table 3-5
Mean Credibility Ratings^{1,2} (SP4A)

Type of Firm	Energy-Weighted Mean	
	CA	Non-CA
Engineering / Architectural Design Firms	6.6	6.5
Energy Service Companies, (ESCOs)	5.6	6.0
Your electric distribution company	7.4	7.0
Building operations and maintenance (O&M) companies	5.5	5.8
Equipment manufacturers	6.2	6.2
Energy Equipment Contractors and Installers (e.g., lighting, HVAC)	5.7	6.2
Companies, besides your electric distribution company, that provide electricity supply	5.6	6.1
Sample Size	515	499

¹Ratings use a 0 to 10 Scale (zero not at all credible to 10 extremely credible)

²For the California data, the value for *electric distribution company* is statistically different from all other values at the 95 percent confidence level. except *engineering/architectural design firms*, for which the difference is significant at the 90 percent level.

Figure 3-6
Firms Typically Called First for Energy Efficiency Assistance (SP4b)
Energy Weighted¹



¹ Difference between local electric distribution company and all other responses is statistically significant at the 95 percent confidence level.

- ***No major systematic differences appear between the CA and non-CA markets with respect to self-reported knowledge of opportunities or barriers to efficiency.***

Compared to non-California customers, California end users rate themselves more highly with respect to knowledge of lighting opportunities but equal with respect to other end users. Between potential barriers, *uncertainty over estimated savings, uncertainty over information provided by proposing firms, the time and cost associated with firm selection and contracting, and the time it takes to become adequately informed* are the highest rated barriers. There is little difference in barrier ratings between regions, or among sectors and size strata.

Table 3-6
Mean Energy Efficiency Knowledge Ratings¹

Self-Reported Knowledge of	Market	Strata				All
		1	2	3	4	
Lighting opportunities (KN2a)	CA	4.2	5.2	6.0	8.5	5.9
	Non-CA	5.0	5.0	5.5	7.2	5.5
HVAC opportunities (KN2b)	CA	3.3	4.4	5.7	8.3	5.4
	Non-CA	4.5	5.1	5.6	7.3	5.6
Other opportunities (KN2c)	CA	3.6	4.9	5.8	7.8	5.5
	Non-CA	5.2	5.0	5.4	6.5	5.4

¹Ratings use a 0 to 10 Scale (zero completely uninformed to 10 extremely well informed)

Table 3-7
Barriers to Implementing Energy Efficiency, Mean Ratings^{1,2}

Self-Reported Significance of Barriers	CA	Non-CA
Uncertainty over whether actual savings will be equal to or greater than estimated savings (BR1a)	6.2	6.3
Amount of time it takes to acquire enough information to make an informed decision to invest in an energy-efficiency project (BR1b)	5.6	5.8
Time and cost associated with selecting contractors and negotiating project terms (BR1c)	5.8	6.1
Uncertainty over <i>information provided</i> by firms proposing efficiency-related projects (BR1d)	6.2	6.0
Disagreements between decision makers within your organization over the relative importance of energy-efficiency related investments compared with other capital projects (BR1e)	4.2	4.8
Lack of access to financing for energy-efficiency related projects (BR1f)	4.9	4.9
Lack of use of formal financial analyses to evaluate energy equipment purchase decisions (BR1g)	4.5	4.8
Lack of availability of energy-efficient products and services (BR1h)	4.3	4.7
Sample Size	515	499

¹Ratings use a 0 to 10 Scale (zero completely insignificant to 10 extremely significant)

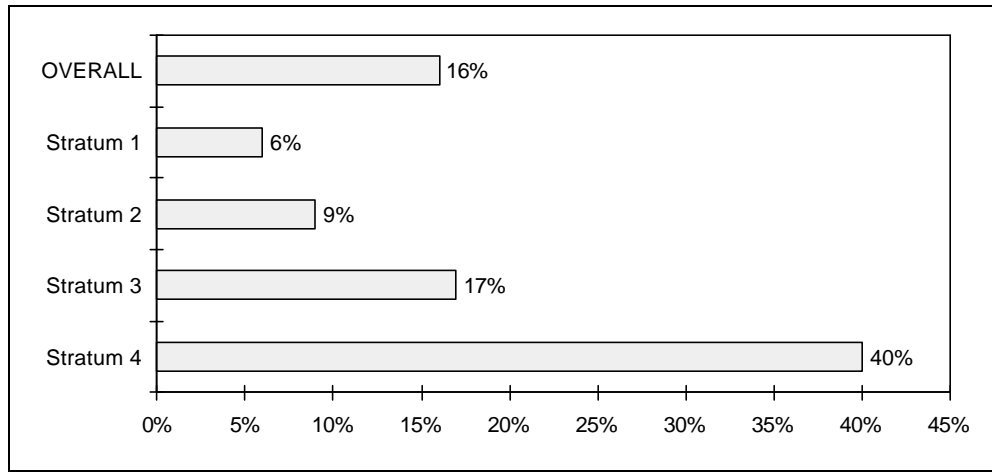
² For the California values, *Uncertainty over savings* and *uncertainty over information provided by firms* are both statistically significant at the 95 percent confidence level from all other barriers, but not from each other.

- ***Awareness of the NSPC program in 1998 was low.*** Only 16% of customers (energy weighted basis) were *aware of the 1998 NSPC program*. NSPC awareness varied by size from 6% for the smallest to 40% for the largest size group.

Table 3-8
Aware of NSPC Program
Energy Weighted/California

Response	Sector						ALL
	Office	Retail	Institutional	Other	High Industrial	Low Industrial	
Yes	11%	8%	30%	14%	19%	14%	16%
No	89%	90%	70%	86%	77%	85%	82%
Don't know/refused	0%	2%	0%	1%	5%	1%	2%
# Respondents	56	67	93	119	91	89	515

Figure 3-7
Aware of NSPC Program
Energy Weighted/California



3.4.2 Results from Interviews with Participant End Users

In this subsection, we present a summary of findings from a set of structured interviews we conducted with a representative sample of customers that are participating in the 1998 NSPC program (see Table 3-9). These interviews were conducted in October 1998, thus readers should note that many of the key program milestones such as DPA submittal and approval had not yet been reached when these interviews were conducted. In this sense, these end user interviews can be viewed as *participant* baselines for some of the information collected.

Table 3-9
Stratification of Participant Customer Sample by Accepted Incentives (As of October 1998)

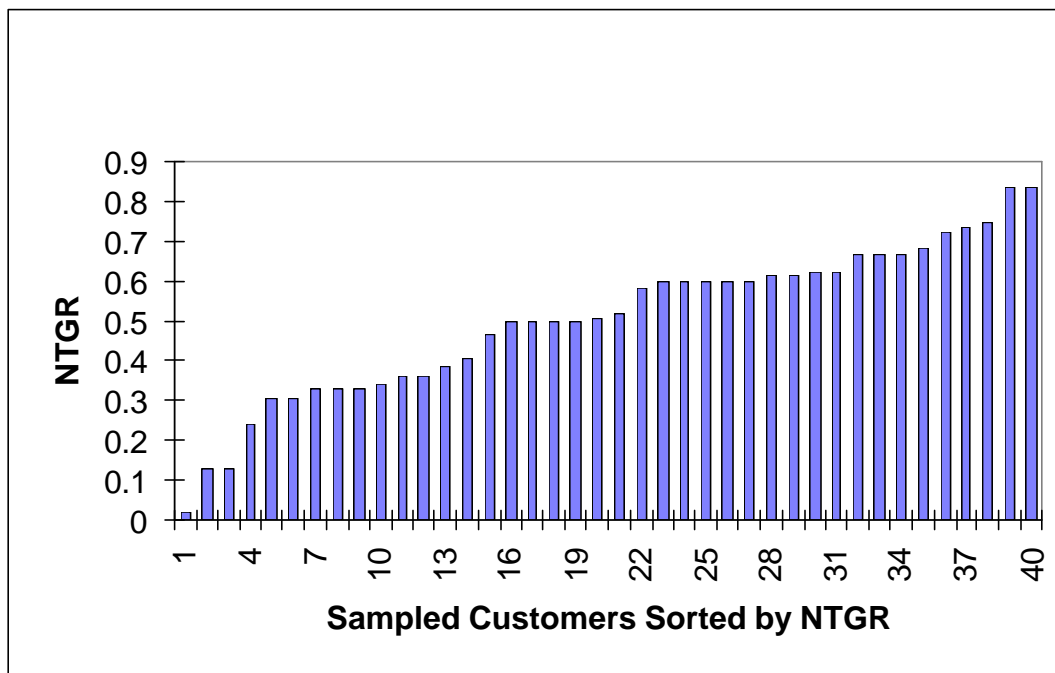
Strata	Definition	Sample		Population	
		n*	Incentives	N*	Incentives
Strata 1	Top 10 customers, incentives (>\$800,000)	10	\$16,220,102	10	\$16,220,102
Strata 2	Incentives > \$300,000 and <=\$800,000	11	\$5,282,966	24	\$10,473,541
Strata 3	Incentives below \$300,000	18	\$1,832,485	58	\$7,125,810
	All Strata	39	\$23,335,553	92	\$33,819,453

* n, N = numbers of unique customers with at least one accepted application

Key findings from the customer participant interviews are summarized below:

- ***Estimates indicate that slightly less than half of the projects associated with the program are likely to have occurred anyway*** (i.e., without the program). Stated inversely, slightly more than half the projects appear to have been implemented as a result of the program. The estimated net-to-gross ratio is 0.53
 - ⇒ Non-Sponsors have higher NTG than Self-Sponsors (0.64 versus 0.38)
 - ⇒ These results remain preliminary in that almost half of the projects have not made it through the DPA acceptance milestone as of this writing.

Figure 3-8
Range of NTGRs Across Sampled Customers



- *Three-quarters of the customers said that they had come up with the energy efficiency improvement idea themselves, either to pursue it by themselves or to be later convinced by a third party to go forward.*

Table 3-10
Description of Process to Decide to Install Energy Efficiency Equipment

Response Type	Number of Respondents	Percent of Respondents
Developed idea ourselves and pursued on our own	17	44%
Developed idea ourselves but were convinced by a third-party to pursue installation	12	31%
Received idea from third party and were also convinced by this party to pursue installation	6	15%
Other	1	3%
Don't Know / Refused	3	7%
Total	39	100%

- *Non-sponsor customers were more likely than self-sponsors to report that third-party firms played a significant role in their decision to implement the NSPC projects.*

Table 3-11
Significance of Role Played by Third-Party Firms in Customers' Decisions to Install NSPC-related Energy Efficiency Equipment

Significance	Sponsor		Non-Sponsor	
	Number of	Percent of	Number of	Percent of
Insignificant	8	44%	2	13%
Somewhat significant	2	11%	1	7%
Very significant	3	17%	9	60%
Extremely significant	5	28%	3	20%
Total	18	100%	15	100%

* Responses for non-sponsors refer to the significance of the third-party sponsor of record on the NSPC application, not of any other companies that may be involved in the process.

- *The most common type of contract between participating customers and third-party firms is fee-for-service (61%), followed by energy performance contracts (21%) and “other” (15%). Only non-sponsors engaged in performance contracts for program projects.*

Table 3-12
Type of Contractual Arrangement with Third Party Firm?

Response	Sponsors		Non Sponsors		All Respondents	
	No. of Respondents	% of Respondents	No. of Respondents	% of Respondents	No. of Respondents	% of Respondents
EPC	0	0%	7	41%	7	21%
Fee-for-Service	13	81%	7	41%	20	61%
Other	2	13%	3	18%	5	15%
Don't know	1	6%	0	0%	1	3%
Total	16	100%	17	100%	33	100%

- *Participating customers were found to be mostly large, high energy using facilities.*
The information analyzed in this section provides strong evidence that the end user participants in the 1998 NSPC are some of the largest, most sophisticated customers in the population and differ markedly from the average customer.

Table 3-13
FTE, Electric Usage, and Square Footage of the Participating Sites of Sampled Customers

Total Customer Sample	Monthly Electric Bill	Full Time Workers	Square Footage
Number of Observations	25	34	30
Mean	161,085	894	453,650
Standard Deviation	302,767	1,822	655,545
Median	50,000	293	191,000
3rd Quartile	100,000	750	313,000
1st Quartile	20,000	100	75,000
Minimum	6,000	7	5,500
Maximum	1,200,000	10,000	2,800,000

- ***Most NSPC participants have previously participated in energy-efficiency programs.*** The majority of sampled customers (almost 62%) reported that they participated in *other* utility energy-efficiency rebate programs in California sometime over the past *two years*.
- ***Most participants actively improve their energy efficiency.*** Ninety-two percent of customers had taken specific actions to improve their facility's energy efficiency within the past two years.

Table 3-14
Taken Specific Actions in Past Two Years, Besides NSPC, to Improve Energy Efficiency?

Response	All Respondents	
	No. of Respondents	% of Respondents
Yes	33	92%
No	3	8%
Total	36	100%

- ***Participants were compared to respondents from the baseline end user survey and found to be most similar to the Strata 4 baseline customers.*** Compared to the average customer in the California market, participants exhibit many more of the organizational practices and knowledge levels associated with rational energy-related decision making.

Table 3-15
Mean Energy Efficiency Knowledge Ratings¹

Self-Reported Knowledge of	Participants	Baseline - Overall Average	Baseline - Stratum 4
Lighting opportunities	7.5	5.9	8.5
HVAC opportunities	7.3	5.4	8.3
Other opportunities	7.5	5.5	7.8

¹Ratings use a 0 to 10 Scale (zero completely uninformed to 10 extremely well informed)

Table 3-16
Activities with Respect to Deregulation

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Selected new supplier	18	56%	10%
Actively shopping	3	9%	5%
Waiting to see market unfold	5	16%	37%
No intention to switch	4	13%	16%
Not evaluated situation yet	2	6%	39%

Table 3-17
Energy Use and Cost Responsibility Assigned to a Specific Person or Group?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Yes- in-house person	20	54%	40%
Yes - group or staff	11	30%	15%
Yes - outside contractor	2	5%	2%
No	4	11%	41%
Don't know	0	0%	2%

Table 3-18
Developed a Policy for Selection of Energy Efficient Equipment?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Yes	22	61%	25%
No	14	39%	72%
Don't know	0	0%	3%

Table 3-19
Apply Long-Term Investment Analysis to Energy Equipment Selection?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Yes	36	92%	58%
No	1	3%	38%
Don't know/refused	2	5%	5%

Table 3-20
Heard of Energy Performance Contracting Prior to NSPC?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Yes	22	61%	30%
No	14	39%	70%

Table 3-21
Percent of Customers Approached by Any Company Offering Energy Performance Contracting in Past Two Years

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Approached	21	55%	27%
Not Approached	16	42%	70%
Don't know/refused	1	3%	3%

- *The value of the incentives and the program's flexibility were the features most commonly mentioned as program strengths.* The majority of the respondents also reported that the prices were set appropriately both in terms of level and in terms of their differentiation based on end use.
- *Customers complaints of program weaknesses were that there was "too much paperwork" and that the forms were "too detailed and complicated."*
 - ⇒ Concerns were raised by customers about the DPAs and the M&V, with specific mentions of the complexity of the forms, labor, expense, and time needed to meet the M&V requirements.

- *Most of the customer respondents indicated that the utility and their contractors were helpful during various early aspects of the NSPC process*, while only a small number said they found them less than helpful.
- *The majority of the customer comments on how to improve the program concerned making the program simpler*. Several comments from the customer respondents revolved around the fact that they were not in touch with firms that provide EESP-type services. Better advertising and outreach was also an improvement that several customer respondents mentioned.

3.4.3 Results from Interviews with EESPs

In this subsection, we present a summary of findings from the three sets of structured interviews we conducted with participant and non-participant energy-efficiency service providers (EESPs) during the course of this study. Two sets of interviews were conducted with participant EESPs, while non-participants were interviewed once. The two sets of participant interviews occurred at different points in the program implementation process. The first-round participant interviews were conducted with 22 of the 26 EESPs in the Program in September and October of 1998. Re-interviews were then conducted with 14 of the participant EESPs in early March 1999. The non-participant EESP interviews were conducted in February 1999.

For the purposes of this report, EESPs are defined as third-party firms that provide any of a number of energy-efficiency related products and services to end users. End users themselves that are participating in the 1998 NSPC are not defined as EESPs but are classified as self-sponsoring customers and are included in the results presented in Section 6. Most of the EESPs interviewed were traditional ESCOs, retail energy service providers (firms that also sell electric commodity), and engineering and contracting firms. The engineering and contracting firms that participated in the Program tended to be companies with either some previous experience in performance contracting or a pre-program focus on efficiency-oriented services.

Summaries of the key findings from each of the EESP interviews by interview-type (participant, participant re-interview, and non-participant) are provided in the subsections that follow.

First-Round, Participant EESP Findings (Interviews: Sept./Oct. 1998)

- *Participant EESPs are diverse, but are represented more by traditional ESCOs and retail energy service providers than by contractors and engineering design firms*. Most of the third-party Program sponsors interviewed characterize themselves as being either traditional ESCOs or retail energy service companies (that also provide electric commodity).
- *Performance contracting is important but not dominant as a contracting product*. Slightly less than half of participating EESPs report that performance contracting is their most important business area; however, on a percent of projects basis, performance contracting is reported to represent about one-third of activity.

- ***Participants ranged widely in size.*** For 1997, the participating EESP respondents reported a collective revenue for California based energy-efficiency related services of approximately \$175 million. The highest level reported was \$90 million, with a low of \$100 thousand and an average of approximately \$10 million. For a number of reasons, which are listed in Section 7.2, these results should be viewed cautiously.
- ***With respect to NSPC project characteristics:***
 - ⇒ On average, two-thirds of the EESPs' NSPC projects were developed with existing or referred customers, rather than with entirely new contacts.
 - ⇒ No major differences were reported between the types of contracts initiated with clients under the NSPC versus those negotiated with customers outside the program.
 - ⇒ Overall, the EESP sponsors reported that they intended to pass back about 90% of the incentive to the customers.
 - ⇒ None of the respondents used the aggregation rules to assemble projects, and many felt that the aggregation rules and requirements were complex.
- ***Program strengths.*** The value of the incentives was the feature most commonly mentioned as well as their flexibility. A few EESPs also mentioned that the program helps them build credibility with end users.
- ***Program weaknesses.*** EESPs complained mostly that there was "too much paperwork" and that the forms were "too detailed and complicated." EESPs also expressed the opinion that the M&V requirements were too intensive.
 - ⇒ A number of interviewees thought that the program's complexity and costs, and associated timing issues, reduced the program's value to customers because incentives were "whittled away" by program and participation costs
- ***The majority of EESP respondents felt that the complexity of the M&V requirements hindered their business development.*** However, a few noted that the M&V rules worked to their advantage.

Participant Re-Interview Findings (Interviews: Early March 1999)

- ***Respondents indicated there were few market impacts from the program.*** Although participants reported some limited changes in business practices and market conditions, few attributed any of these changes to the NSPC program. Most stated that the NSPC program was too small to affect the market and that there have been too few projects actually implemented to date to lead to any market effects.
- ***M&V is considered too expensive and out of proportion by many.*** A few respondents did state that M&V practices similar to those required for the NSPC program have been adapted for use in other projects. However, the majority - especially those associated with lighting measures, which were the most commonly installed measures - stated that the M&V requirements were onerous, expensive, and overly complex. There were strong feelings that, at least for lighting, stipulated savings or simpler checks of operating hours

and confirmations that the measures were in place should suffice to estimate and verify those savings. Several stated that, even for non-lighting measures, the M&V costs were very expensive and that waiting two years for verification and payment is too long to be compatible with their business.

- ***The Program is perceived to be designed to benefit traditional ESCOs and not other potential EESP types or deliverers of efficiency services.*** Although some respondents thought that the NSPC had brought the efficiency industry to a higher level, a more common perception was that the program was designed to benefit the traditional ESCO model only, and did not necessarily meet the needs of other business models within the evolving energy-efficiency services industry. These respondents expressed the opinion that the paperwork requirements, M&V, project size threshold, and other features of the program were not compatible with their business.
- ***Significant delays in paperwork have caused difficulties and relatively few projects have been implemented.*** Many of the respondents stated that the program's paperwork was onerous, but in particular, they cited significant problems with delays in review and approvals. The participants noted several particular consequences to them, including: (1) problems with customer sites affected by delays; (2) a year after submittal, some projects have not been approved, and EESPs are still expending time and money to gain approval; and (3) projects are being cleared from the wait list to begin the process for approval nearly a year after submittal. Although there clearly are start-up issues, many stated that the paperwork review process needed to be faster.
- ***Perception that simpler programs would have delivered more efficiency.*** A number of the respondents noted that they had favorable experiences with simpler programs that they felt had been more effective in delivering energy efficiency services to the marketplace. Particularly cited were "express" rebate programs and other programs with less burdensome paperwork and M&V requirements, and consequently, fewer delays. These EESPs feel that the greater complexities associated with this program have delayed getting savings to customers.
- ***Most plan to participate in PY99, but additional changes are desired beyond those already made for PY99.*** Regardless of their opinion of the PY98 program, the funding is attractive, and the majority plan to consider participating in PY99. Importantly, several noted that their participation will be contingent on a review of the changes and a determination of whether the new revised program was a better fit within their business model and customer mix. Although a number of the respondents feel that there have been positive aspects to the changes made to the PY99 program offering (in the limited time they had to review them), others note remaining deficiencies from their point of view. The reduction in the cap was applauded. Many noted that the lower prices would hurt the program economics, but none seemed to feel that deals would be lost because of the lower incentives. Many hoped that the M&V would be much simpler, and significant changes for lighting were especially desirable. Faster paperwork flow was one of the most desirable changes. However, several respondents seemed skeptical that the "small" program had

been simplified sufficiently to encourage participation, and were concerned about the restriction that customers could not serve as their own EESP in that program.

Non-Participant Interview Findings (Interviews: February 1999)

- ***The Overall Level of Interest in Participating in the NSPC is limited.*** Future participation in the NSPC program among firms not participating in last year's program is likely to be limited. Awareness of and interest in the NSPC program among out-of-state firms appears to be limited. Out-of state non-participant firms are not likely to become active participants in the NSPC program unless working with a large account that asks them to implement energy efficiency services for facilities within California.
- ***Some Non-participant EESPs Have Concerns with the Program Design.*** In-state non-participant firms that are aware of the program indicate that, in many ways, the program is not compatible with the manner in which they are accustomed to doing business. Problems included uneven communication about the program, concerns about program timing, delays, impacts on customer pocketbooks, and the complexity of the M&V.
- ***Additional Marketing May Attract Additional EESP Participants.*** The program may be of interest to Mechanical Engineering and Contracting firms that are not intimately familiar with the program but may be able to utilize the program in niche markets that they serve. Targeted marketing to these firms may bring in new players. Other California non-participants indicated they would be likely to participate in a redesigned program if the program was simpler and was more sensitive to customer needs.
- ***Trends in Performance Contracting Are Not Yet Clear.*** There is a great deal of ambiguity regarding the future of performance contracting. While some larger firms note that they are pursuing this business area quite actively, others have pulled out and are forging long-term customer relationships through other avenues.

3.5 RECOMMENDATIONS

The recommendations presented below were developed principally as a result of our near-term market effects and process-related analyses. These recommendations are intended to suggest ways in which the NSPC might be improved or modified with respect to the achievement of market transformation-related objectives, without compromising the resource-acquisition objective of the Program. The recommendations are not intended to provide specific program design details, but rather to suggest general areas of improvement upon which we believe policy-makers and NSPC program designers should focus their efforts. Although a few of the recommendations made here were partially addressed by the CBEE in its PY99 advice filing,¹⁵ they are included here to underscore their importance. The program recommendations are to:

¹⁵ Recommendations of the California Board for Energy Efficiency on 1999 Programs and Budgets, Institutional and Transitional Issues, and Adopted Policy Rules, October 15, 1998.

- *Clarify Which Specific EESP Changes the Program Seeks to Induce and Develop Program Mechanisms that are more Directly Tied to Initiating these Specific Changes*
- *Continue Efforts to Change the Composition of End-User Participants, Future Participants should be More Representative of Average Customers to Increase the Likelihood of Generating Market Effects*
- *Reassess the Role of Performance Contracting within the NSPC's Objectives, particularly with Respect to M&V Requirements*
- *Expand the Diversity of EESP Participants*
- *Continue Efforts to Reduce Perceived and Actual Costs of Program Participation*

These recommendations are discussed, along with recommendations for further NSPC-related research, in Section 11 of this report.

4

PROGRAM THEORIES AND HYPOTHESES

4.1 CONTEXT AND PURPOSE FOR DEVELOPMENT OF INITIAL PROGRAM THEORIES AND HYPOTHESES WITHIN THE EVALUATION OF THE NONRESIDENTIAL STANDARD PERFORMANCE CONTRACT (NSPC) PROGRAMS

One of the first tasks of this study was to develop initial program theories and hypotheses that could be used to form the basis of our evaluation. In particular, a detailed exploration of program theories and hypotheses was necessary to inform development of data collection instruments, to establish appropriate baseline benchmarks, and to provide a framework for assessing both short- and long-term market effects. It is important to recognize that the focus of this program theory chapter is on the *market assessment*¹ portion of our evaluation. Specifically, our goal in this chapter is to explore the ways in which the NSPC might lead to causal changes in the marketplace that ultimately result in long-term *market effects*.² There are several other aspects of this evaluation that are important but are not within the scope of this section, including evaluation of first-year energy savings and process-related issues. Process-related issues and first-year net effects are addressed in separate sections of this report.³

As further background and context for our initial program theory development, we provide a brief summary of regulatory history and excerpts of key current policy rules that are relevant to this evaluation. Note that this discussion is not meant to comprehensively capture all aspects of current and evolving regulatory policy, because a great deal has been written and presented elsewhere on these topics.

¹ Under Attachment 2 to Decision 98-04-063, Interim Opinion: Policy Rules and Request For Proposals For Energy Efficiency Program Administrators, April 23, 1998, “market assessment” is defined as follows: Any characteristic of the market for an energy-related product, service, or practice that helps to explain the gap between the actual level of investment in, or practice of, Energy Efficiency and an increased level that would appear to be cost-beneficial.

² The above policy rules define a “market effect” as: A change in the structure or functioning of a market or the behavior of participants in a market that is reflective of an increase in the adoption of Energy-Efficient products, services, or practices and is causally related to Market Interventions.

³ Note that independent assessment of gross energy savings using established engineering and econometric impact evaluation techniques was not within the scope of this project. The M&V requirements of the program itself will provide adjustments over time to the initial estimates of gross savings included in project sponsor’s Basic and Detailed Project Applications (Bias and DPAs, respectively). An analysis of the net program savings that can be applied to gross savings was conducted as part of this evaluation and is discussed in Section 6. In addition, program database information may be used as the primary basis for preliminary first-year cost-effectiveness estimates when we conduct the final analysis of the program tracking databases in a supplement to this final report.

4.1.1 General Policy Background

There are several important policy-related backdrops to this evaluation, in general, and to our initial program theory and hypothesis development, in particular. First and foremost, it is important to acknowledge that the public-policy nature of regulations that justify intervention in energy efficiency markets has changed in California in recent years and that the public-policy-based choices of different means of intervention have reflected this change. Second, the NSPC program design itself is an explicit part of the changed nature of publicly-funded intervention. In fact, 1998 represents the first year in which an NSPC program has been implemented in California. A brief summary of the high-level changes in California's energy-efficiency program policies is provided below:

1. In the late 1980s the CA Public Utilities Commission chose to rely on the regulated utilities as the primary agent for acquiring least cost demand-side resource options, in the context of the Integrated Resource Planning set of regulations that defined this era. (See CPUC Policy Rules that were in effect during 1990-1997).
2. In the early 1990s the Commission also accepted and supported the notion that it wished to provide support for non-utility providers of energy efficiency products and services by way of DSM bidding programs (see DSM Bidding decisions and legislative direction to the CPUC to conduct these "experiments").
3. Within this context, California's regulated utilities administered and implemented both information and rebate programs. Utility shareholder incentives were often tied to the measured energy savings obtained from rebate programs, which led to an evaluation focus on measuring reductions in energy usage.
4. As part of a broader restructuring process aimed at enabling a competitive energy industry, the CPUC and the legislature changed the nature (objectives and means) of continued intervention in energy efficiency markets. These changes included:
 - (a) the abandonment of IRP and utility-based least-cost planning;
 - (b) a gradual move toward independent administration of energy-efficiency programs;
 - (c) the explicit elevation of a competitive, energy efficiency industry as an objective for achieving energy efficiency goals during this industry transition period; and
 - (d) the explicit support for an SPC design as an important program design choice for supporting the development of a competitive, energy efficiency industry of providers of products and services.

4.1.2 Policy Rule Excerpts from Decision 98-04-063

Beyond these general trends, there are several specific policy rules that are relevant to our discussion of NSPC program theories and hypotheses. In particular, the adopted policy rules under *Attachment 2 to Decision 98-04-063, Interim Opinion: Policy Rules and Request For Proposals For Energy Efficiency Program Administrators, April 23, 1998*, contain a number guidelines relevant to the program theory piece that follows. We have used these policy rules as

important guides to the market assessment issues addressed in this section and will continue to rely on them for guidance on all aspects of this evaluation that are within our current project scope. Readers are encouraged to peruse these rules themselves in their entirety, while focusing in particular on Policy Rules II, IV, V, and VI. As a convenience, a few excerpts from these rules are provided in Appendix B to this section:⁴ We believe that, Policy Rule VI-3, in particular, underscores the rationale for development of program theories and hypotheses and their role within any comprehensive analysis of a particular program's market effects.

4.2 THEORY-BASED EVALUATION

As we noted at the outset of our proposal to perform this study, we have used a theory-based evaluation approach for the baseline and market effects portions of this study. Theory-based evaluation is a broad descriptor of an evaluation approach that has been used in a number of policy fields for some time. According to Weiss,⁵ the idea behind theory-based evaluation (TBE) is that:

...the beliefs and assumptions underlying an intervention can be expressed in terms of a phased sequence of causes and effects (i.e., a program theory). The evaluation is expected to collect data to see how well each step of the sequence is in fact borne out. This approach to evaluation offers a way in which evaluation can tell not only how much change has occurred but also, if the sequence of steps appears as expected, how the change occurred. If the posited sequence breaks down along the way, the evaluation can tell at what point the breakdown occurred.

Theory-based evaluation provides a critical framework to the evaluation of programs that seek to cause lasting structural changes in social or economic systems. The first lesson of TBE is that a useful evaluation must be fully informed by the causal theory that underlies the program intervention.

Our initial belief was that the underlying causal theories upon which the NSPC intervention is based had not been developed fully. We did not intend to mean that there were no theoretical models of the program's market effects put forth, but only that such efforts to date had been somewhat limited in scope and perspective. Thus, one of our evaluation team's key initial charges was to collect and summarize any information on theories that have been articulated to date, and to add to these through our own analyses. This was a multi-phase process that occurred throughout the evaluation.

The first stage involved conducting background research to help construct as much of a working theory and set of hypotheses as possible to guide our research plan and the design of our customer, EESP, and other market actor survey instruments. In the best case scenario, these original theories

⁴ Note that these excerpts are not meant to imply that the excerpted rules are more important than any of the others in the decision. These excerpts are simply provided to give some specific context for the program theory piece that follows.

⁵ Weiss, Carol H., "How Can Theory-Based Evaluation Make Greater Headway?," *Evaluation Review*, Vol. 21, No.4, August, 1997, 501-524.

and hypotheses would all have been completed in our first iteration, thereby perfectly informing our evaluation plan. This, of course, did not occur because of two facts: first, we learned a great deal more about the program and the market which it seeks to affect through our primary research efforts; and, second, the schedule demanded that our initial round of customer and EESP surveys had to begin very quickly. Recognition of this first fact was reflected in the RFP's inclusion of two phases of EESP interviews during the course of this project (which runs into mid-spring 1999), and the fact that subsequent evaluations of this program were likely to occur in future years.

The remainder of this section presents our initial program theories and hypotheses and summarizes, in Appendix D, other sources with information or perspectives relevant to this topic. *Note that this information was never intended to be a research plan or research agenda.* Rather, it was an attempt to articulate hypothetical mechanisms by which the NSPC might induce lasting market effects. As such, this information was a critical *input* into finalizing our research plan and developing our survey instruments. The primary intent of this document was to develop a comprehensive evaluation perspective on the program.

In developing the initial theories and hypotheses that follow, we also used the *Market Transformation Scoping Study*⁶ commissioned by CADMAC and completed in 1996 as a source of information and analytical frameworks, particularly with respect to definitions of market barriers.

4.3 INITIAL DISCUSSION OF THEORIES AND HYPOTHESES

A few caveats to the remainder of this section are warranted and provided below:

1. Because our theory development was focused on the long-term effects of the program, we did not assume that if they did not appear in the first year that they would not appear eventually.
2. We recognized that the current program is a first draft and will change, and the fact that if the hypothesized effects did not result from the current version, it did not mean they could not result from a later version.
3. Reflecting #2, a major part of the current study was a process evaluation conducted to determine how the program could be changed in a way that makes it more likely that the hypothesized effects will eventually occur.
4. Some effects could be expected to occur earlier than others.
5. We attempted to assess each effect as best we could in this study, but in some cases we needed to rely on proximate indicators.

⁶ Eto, J., Prah, R., and Schlegel, J. (1996) *A Scoping Study on Energy-Efficiency Market Transformation by California Utility DSM Programs*. Berkeley, CA: Lawrence Berkeley National Laboratory.

In order for energy-efficient products and services to be self-sustaining in the marketplace, both supply-side and demand-side interests must become aligned with respect to the value of these products and services. On the supply side, it is critical that the products and services are available, that vendors are aware and knowledgeable about them, and that they stock, promote, and specify them in their business interactions with end users. On the demand side, it is equally critical that end users are aware and knowledgeable about the products and services. In addition, most end users must be able to justify their purchases based on some level of analysis or judgment that demonstrates that the incremental costs, if any, are justified based on the monetary value of the energy savings obtained, plus the value of any other non-energy benefits. If the large majority of end users' investment criteria are not met (which could be because a measure is genuinely uneconomic or because the end users' investment criteria are inappropriate or nonexistent), or if end users have significant concerns about the product or service's features, quality, reliability, or other characteristics, then it is unlikely that enough demand for the products and services will occur to create significant self-sustaining markets.

As first steps in our process of further developing the theories and hypotheses necessary for evaluating the NSPC, we drafted a number of diagrams that graphically present the interplay between the variety of market forces, market actors, and interventions relevant to the program. We begin by presenting Figure 4-1 below, in which we show the positive causal feedback loops that the program's designers and proponents may seek to engender. This diagram focuses on the big picture relationships between the market actors and administrators. Key aspects of this diagram of which to take note include the following:

- The program interventions are carried out by program administrators, which currently include California's three major electric IOUs, but which will be consolidated into a single entity in 1999.⁷
- The feedback relationships between end users, EESPs, and other supply-side actors (most notably, designers, contractors, distributors, and M&V specialists) are complex and dynamic. For example, any of the following or combination of the following may occur:
 - ⇒ Customers may work with EESPs who provide turnkey efficiency services. Under this scenario, the EESP may also procure products and services from downstream supply-side actors⁸, however, the EESP takes the lead in all dealings with the end user. This situation is denoted by the dashed box surrounding these entities in the figure.

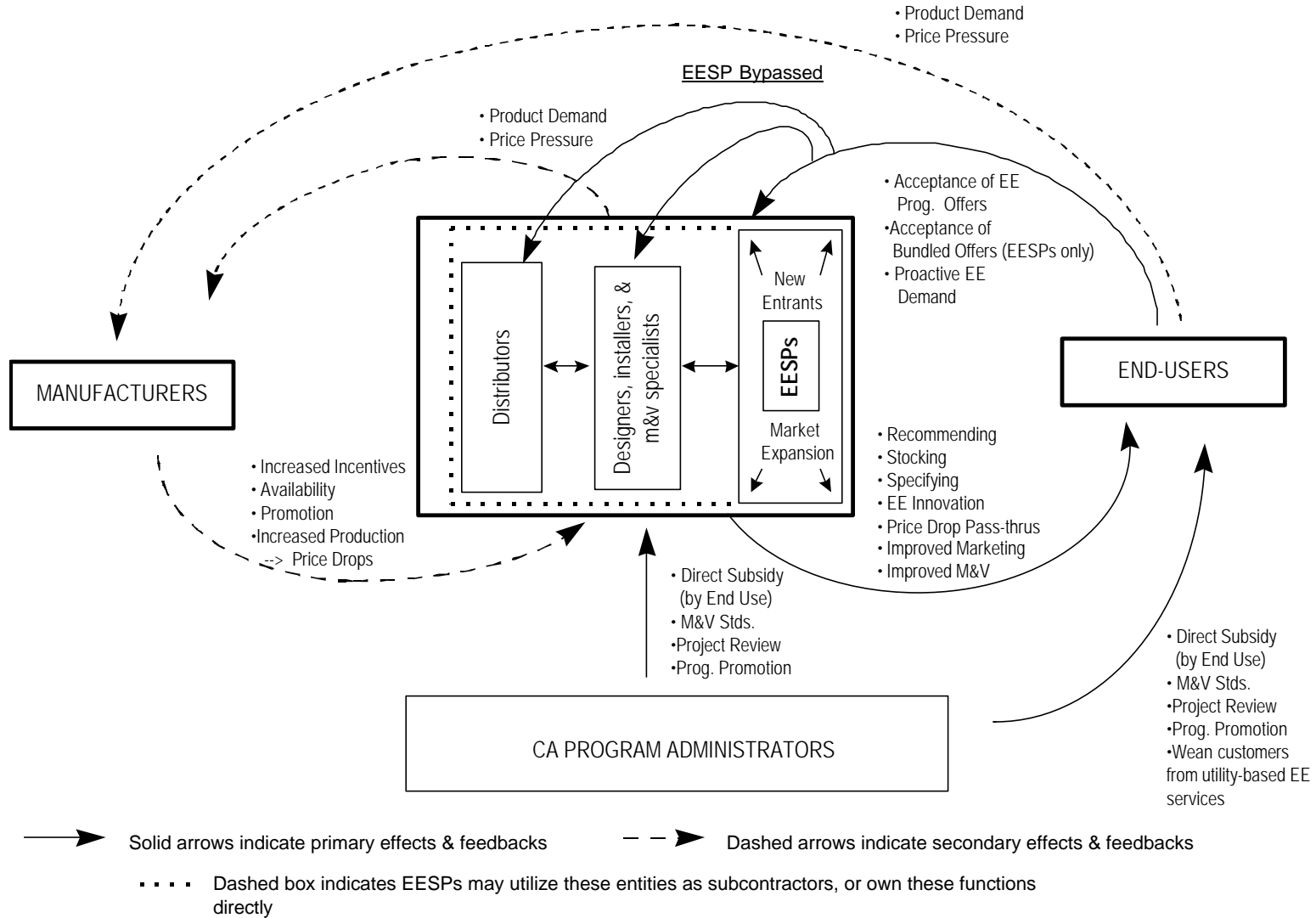
⁷ Note that in our terminology public purpose "interventions" emanate from administrators (on behalf of the CPUC and CBEE), whereas project marketing by EESPs occurs in response to these interventions.

⁸ Some parties have used the term "upstream" to refer to all activities upstream from end users. We prefer to differentiate end users from supply-side actors, in general, and use the terms upstream and downstream to differentiate within the supply chain itself. Specifically, we use the term "upstream *supply-side actors*" to refer to manufacturers and "downstream *supply-side actors*" to refer to non-manufacturers. Examples of "downstream" supply side actors include wholesale distributors, contractors, designers, EESPs, and retailers.

- ⇒ Customers may choose to *bypass turnkey EESPs* and work directly with the traditional downstream supply-side actors themselves. This situation is denoted in the figure by the branch arrows that go directly from the end users to the downstream actors.
- ⇒ Some customers may even choose to avoid almost all downstream actors and procure their efficiency products directly from manufacturers.
- One of the effects postulated is that the program leads customers to prefer providers that bundle energy-efficiency services along with their energy commodity; thereby making energy-efficiency a key driver in the choice calculus of private market actors.
 - Of course, demand for energy efficiency services need not be limited to bundled offers. A related hypothesis is that customers respond positively to program-induced changes in private sector energy efficiency offers more generally, which simply initiates a positively reinforcing cycle of supply and demand for such services. Two important indicators of such a positive feedback mechanism would be increases in the number of EESPs and the size of the market for their services.
 - The program interventions themselves are focused on both EESPs and end users. Note that we do not show any direct program interventions at the manufacturer level of the supply chain (see following bullet).
 - We have differentiated what we could be the primary and secondary order effects of the program based on its current design. Primary effects are those that involve the demand for efficiency services that occurs between end users and downstream supply-side actors. Secondary effects are those that occur between upstream supply-side actors (i.e., manufacturers) and downstream supply-side actors, and to an even lesser extent, between manufacturers and end users. We hypothesize these as second order effects because of two factors:⁹
- ⇒ The current program design does not explicitly involve or target manufacturers.
- ⇒ The current program design sends end-use incentive signals, but not measure-specific incentive signals.

⁹ In addition, because manufacturer-level effects typically take many years to occur, they are not a focus of the current study's measurement activities. However, evaluations in future years are likely to consider these effects.

Figure 4-1. Possible Market Feedback Mechanisms Initiated by NSPC Interventions



Although the end-use level incentives may turn out to result in significant enough changes in demand for specific products that manufacturers' production practices and marketing are affected, it is also possible that end-use incentive pricing results in a diffusion of demand across large numbers of products and services that have relatively small effects at the manufacturer level of the supply chain. We contrast this approach to some of the more successful measure-specific rebate programs of the past which focused on large incentives (relative to the total relevant market) that were targeted to very specific technologies, such as T8 lamps and electronic ballasts, which resulted in strong upstream demand signals.¹⁰

On the other hand, the end-use incentive approach may result in other advantages relative to the traditional measure-level rebate approach. By setting different incentives for different end uses, the program rules may do a better job than past rebate programs of encouraging utilization of efficient measures in non-lighting end users. Also, the end-use approach provides more flexibility, which could lead to private sector product and service innovation, and does not put program administrators in the position of picking the "right" measures. Of course, an opposite danger also occurs with end use pricing, that is, suppliers and customers pick measures that are less in need of intervention support than others, i.e., "cream skimming." This can be mitigated by prohibiting the use of funds for certain measures.

At the macro-level presented in Figure 4-1, the primary hypothesized effect of the program is to stimulate and reinforce a positive feedback relationship between customers and downstream suppliers of energy-efficiency products and services. One intended aspect of this process is to wean customers from obtaining all of their efficiency services from regulated utilities. An explicit goal of the NSPC is to encourage customers to obtain and procure efficiency services directly from private sector actors. Increased customer demand for private sector efficiency services may then support existing EESPs, encourage new entrants, and lead to greater competition among service providers, reductions in efficiency product and service costs, improved EESP marketing and sales practices, and energy-efficiency product and service innovation. Secondary effects between downstream suppliers and upstream manufacturers of efficient products may result as well. These potential supply-side improvements may then lead to further increases in customer demand for efficiency services. One possible formulation of the goal of the program is that it should contribute to the creation of a *self-sustaining market* for energy-efficiency products and services that captures *all, or a portion, of* the cost-effective opportunities in end-user facilities.¹¹

¹⁰ See *PG&E and SDG&E Commercial Lighting Market Effects Study*, prepared by XENERGY Inc. for PG&E and SDG&E, July, 1998

¹¹ Note that Policy Rule II-2 emphasizes the importance of the availability of cost-effective energy efficiency "choices", while Policy Rule II-4 states that success in transforming markets means reducing barriers in ways that "allow" customers to "obtain" all cost-effective products and services in a self-sustaining fashion. In our opinion, the question of whether success should be judged upon the *availability* of such choices, the extent to which cost-effective products and services *are actually obtained*, or a combination thereof, requires further clarification by California's energy efficiency policy-makers with respect to this specific program.

It is important to recognize that any program intervention may initiate negative as well as positive market feedback mechanisms. Examples of negative market feedbacks that one can hypothesize from the NSPC program include the following:

- Suppliers for whom energy efficiency is not a core competency may respond to the intervention by selling even more aggressively to those customer practices, such as first cost minimization, that favor their products. Rather than responding to the program incentives to promote energy-efficiency products and services, such suppliers might choose to “fight” rather than “switch.” Such a response, if it were to occur, is not necessarily an indication of any flaw in the program, however, it could indicate that the program does not meet the business needs of all relevant market actors. Also, this phenomenon could be expected to be dynamic in that some firms may continue to promote inefficient energy solutions initially, but convert over time as the market shifts to demanding higher efficiency products and services.¹²
- The program may support EESPs that seek public intervention funds at the expense of EESPs that are already focused on providing efficiency services without subsidy and do not invest resources in seeking such funds. If, for whatever reason, firms that chose *not* to seek such funds had more attributes that would lead to successful promotion of energy-efficiency in the absence of public intervention, it is possible that the program could support less effective providers at the expense of these other firms. If the success of the latter is impeded at the expense of the former, it is possible that this will decrease the likelihood that sustainable market mechanisms are created, or defer the time at which sustainability is achieved.

Though this may seem very hypothetical, it is not without historical basis. There were, for example, a number of solar hot water heater firms with poor products and business characteristics that prospered in California in the early 1980s at the expense of other firms because they were most successful at taking advantage of the public interventions of the time.

The basic issue here is one of self-selection: participating EESPs may differ significantly from non-participating EESPs in ways that are material to the public policy objectives of the program. This can be examined by tracking the specific firms and firm types that have participated in past programs (e.g., DSM bidding and utility rebate) and the NSPC and comparing these entities with nonparticipant EESPs.

¹² For example, in the market effects study of PG&E and SDG&E’s T8 lamp and electronic ballast interventions referenced previously (XENERGY, 1998), it was found that downstream actors fell into three distinct groups with respect to specifying and efficient lighting components: Proactive True Believers (convinced of the intrinsic value and lead promotion), Market Responders (recognize the value based on market demand, but tend to follow rather than lead the market) and Unconverted (continue to promote less efficient lighting components). One indication of the programs’ success was that the Unconverted group represented only 10 to 20 percent of suppliers. Since this study was *ex post* only, we do not know what percentage of the market the Unconverted represented at the outset of the programs’ ramp up in 1992, however, indirect evidence suggested that the percentage was significantly larger.

- Similarly, if the availability of program funds increases demand beyond the supply capability of established market players, or simply makes it too easy for new entrants to gain market share, there could be a decrease in the overall quality of EESP services. This could result if the program supported firms with poor business practices that would not otherwise succeed in an unsubsidized market.

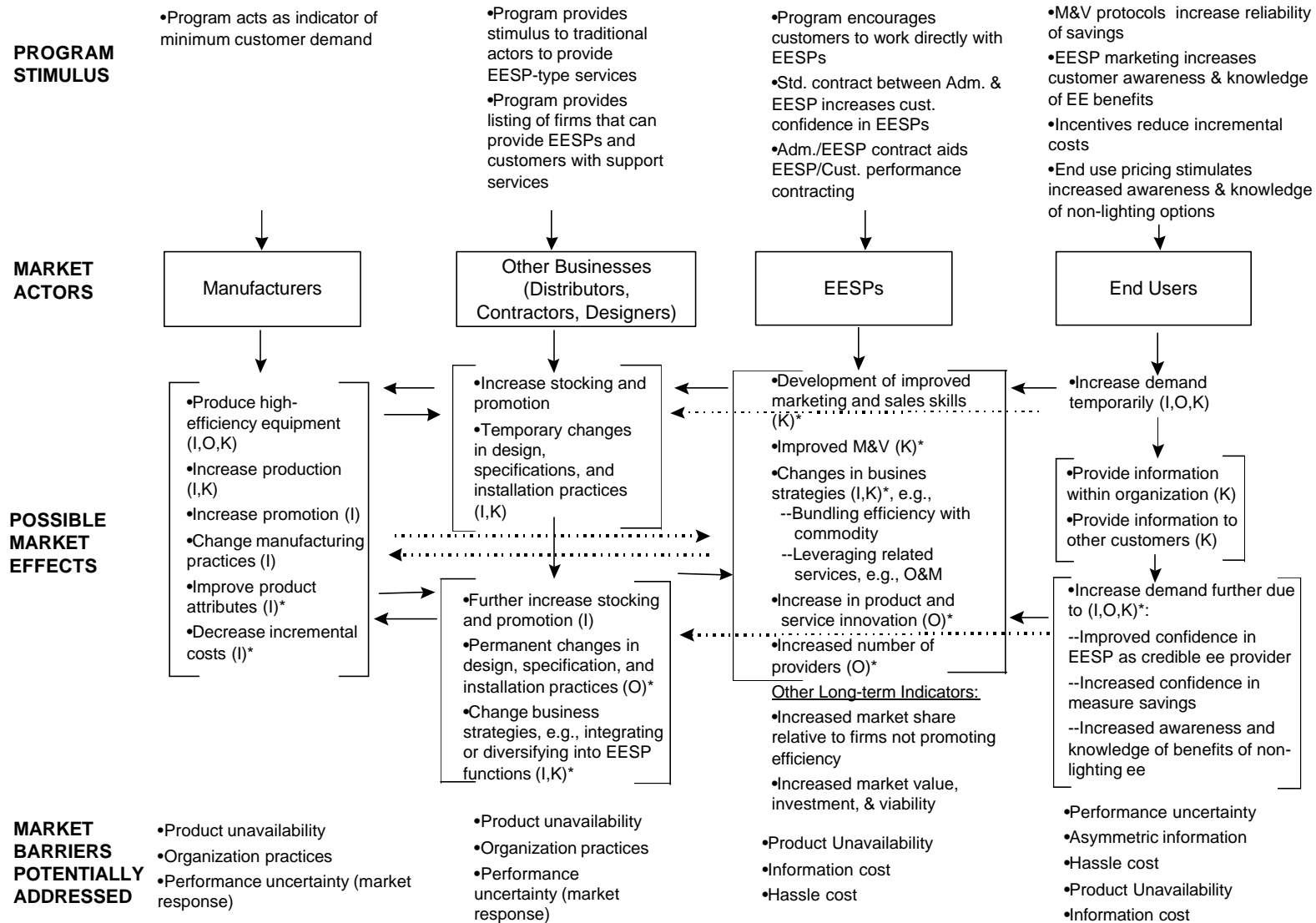
The second diagram that we present in Figure 4-2, is a market influence diagram for the NSPC program. This diagram is based on the prototypes and examples presented in the *Market Transformation Scoping Study*. In this diagram, we provide additional detail on the program's market interventions, the barriers targeted, and the hypothesized short-term and long-term market effects that may result from the intervention. As described in the scoping study, the market influence diagrams are designed to illustrate the following:

- (1) the casual chain of specific market effects that are hypothesized to result from the program, showing, for each link in the chain, which market actors are posited as changing their market-oriented behavior, why they do so, and in what order; (2) which market effects appear to be only temporary and which may have the potential to last after the program is withdrawn; and (3) the specific relationship between the hypothesized market effects and any lasting reductions in the market barriers the program is believed to have the potential to achieve.

Figure 4-2 consists of the following elements:

- At the top of the figure, a series of vertical arrows with captions denote the initial impact of the program on various market actors.
- Below these arrows, a row of boxes indicates the major categories of market actors believed to play a role in the series of behavioral changes that constitute the overall market effect. In this case there are four boxes, representing manufacturers, other businesses, EESPs, and customers.
- Below the boxes indicating the major categories of market actors involved, a series of hypothesized market effects are: (1) categorized according to the set of market actors whose behavior is posited as changing; (2) linked by arrows to show the hypothesized causal sequence in which the behavioral changes occur; and (3) grouped together by brackets to show which sets of market effects act as causal unit (e.g., cannot be disentangled from one to another in illustrating the hypothesized sequence of behavioral changes). Whether the behavioral change is believed to result from a change in the market actor's incentives, options, or knowledge is indicated with an I, O, or K.
- Market effects believed to be lasting are categorized according to the market actor whose behavior is posited as changing with an asterisk (*).
- Finally, the market barriers these effects may address (as defined in the *Market Transformation Scoping Study*) are listed in the last row in the figure.

Figure 4-2. NSPC Market Influence Diagram



Notes: Dashed arrow indicates market actor bypassed, * =Possible Lasting Mkt. Effects, I=Incentives, K=Knowledge, O=Options

4.3.1 Program Interventions

We begin with a discussion of the program stimuli that comprise the first horizontal section of the diagram. The principal interventions of the NSPC are focused on EESPs and end users. The principal direct interventions are the provision of financial incentives for energy savings delivered according to the program's rules, the requirement that project sponsors engage in a performance contract with the program administrator, and the use of standardized M&V protocols for determining the actual savings that result. Though not a requirement, most of the program's designers sought to encourage customers to work with EESPs on projects.¹³ Program stimuli for other market actors are more indirect. For example, if the program succeeds in increasing customer and EESP demand for energy-efficiency products and services, traditional distributors, contractors, and designers will see an increased demand for the efficiency-based component of their services. They may fulfill this demand by working with EESPs or, perhaps, by increasing the provision of EESP-type services (such as performance contracting, efficiency opportunity identification and analysis, and M&V) within their core business offerings. Finally, program stimuli at the manufacturer level are limited to the indirect effect of increased end user and downstream vendor demand for energy-efficient products. As discussed previously, an important question is whether the end-use pricing provision of the program will produce enough product-specific demand signals to capture the attention of manufacturers.

The next major section of the influence diagram addresses the possible market effects of the NSPC.

4.3.2 Possible Market Effects - EESPs

Our review of the background literature and initial stakeholder interviews all indicate that the principal effects of the program hypothesized to date are related to changes in EESP practices. As stated in the RFP for the NSPC first year evaluation: *While a range of plausible hypotheses can be developed regarding the ultimate effects of the NSPC programs on the market barriers facing customers, none of these is likely to be borne out if the programs do not first lead participating EESPs to change their marketing practices and business characteristics in relatively lasting ways.* To identify measurement indicators for this evaluation, we have hypothesized some of the specific ways in which EESP business practices might be affected by the NSPC program. Further discussion of the possible EESP market effects is provided below.

Development of improved marketing and sales skills. By providing financial assistance, the program may enable or encourage EESPs to make changes in their marketing and sales practices. Such changes could include shifts in branding, advertising and marketing strategies to highlight energy-efficiency capabilities and services. Related improvements in target marketing techniques may occur which could reduce project acquisition costs. EESPs may also learn to convince end users to agree to final contract terms more quickly (thereby reducing project contracting costs) by

¹³ It was expected that most of the project sponsors, who must fulfill the NSPC program requirements, would be EESPs. To date, however, a large percentage (roughly half) of sponsors have been end users.

leverage the backing and credibility of their contracts with the program administrator. Another result could be new organizational structures and alliances between EESPs and other market actors. For example, an EESP might engage in a joint venture with a major air-conditioning manufacturer to market turnkey efficiency services.

Changes in business strategies and new market entrants. Changes in a variety of energy-efficiency services can be hypothesized based on the NSPC interventions. By providing financial incentives, the program may aid a new breed of energy service providers (ESPs) that offer both energy commodity and energy efficiency products and services. The NSPC funds may encourage ESPs to make such offers and it may make the selection of such ESPs more likely, thereby demonstrating the viability of this type of bundled service offering in the restructured California electric market. The NSPC may also be used by other companies that have important energy-related market niches to incorporate energy-efficiency into their traditional service offerings. For example, building operations and maintenance (O&M) companies could use the program funds to expand into guaranteed energy savings projects, which contrast with their traditional “keep it running” and emergency replacement type services. Success on NSPC projects could then lead such firms to offer contracts that include energy performance guarantees.

Energy-efficiency product and service innovation. The financial incentives, in general, and end-use pricing, in specific, as well as other program features, may lead EESPs and other market actors to develop new products and services and improve existing ones. By providing larger incentives for non-lighting measures, increased attention may be focused on the cost-effective efficiency opportunities in these other end uses. In addition, end-use pricing and standardized M&V requirements have been designed to encourage expansion and innovation of performance contracting. One of the clear goals of the program is to encourage innovation in performance contracting that leads to greater penetration of this efficiency-based service beyond the traditional high reliability/low M&V cost applications such as lighting, and beyond traditionally responsive customer segments such as the institutional and government sectors.

Changes in breadth and depth of EESP industry. Number of EESP service providers. Increased market share relative to firms not promoting efficiency. Increases in market valuation and investment. Improved financing terms. Consistent with the specific changes in business practices and service offerings described above, changes in the size and characteristics of the EESP industry itself are important potential market effects. The program may lead, in the short term, to new market entrants and changes in the types of entities providing EESP services. This may also lead to increases in the relative market share of EESPs in comparison with competing firms that do not actively promote energy efficient products and services. If EESPs are successful in the marketplace, it is likely that their market value will also increase. A related effect could be that EESPs are able to attract greater investment and lower-cost financing which could lead to further business expansion and product and service improvements. In addition, in order for energy efficiency products and services to be offered cost-effectively to the marketplace, the EESP industry itself will need to be sufficiently competitive (e.g., it must be free of barriers associated with imperfect competition and imperfect regulation). If these short-term, supply-side changes contribute to the stimulation of supporting long-term demand-side effects, then both sets of

effects are more likely to sustain (by reinforcing each other) when the program intervention is withdrawn.

Improved M&V. The standardized M&V protocols may improve the knowledge and capability of some EESPs by requiring that minimum standards be met and encouraging customers to seek providers that can demonstrate performance. The M&V protocols may also lead to M&V innovation as firms seek the most cost-effective ways of demonstrating performance. This may require flexibility and an expeditious process for revising the protocols.

4.3.3 Possible Market Effects - End Users

In our evaluation review activities and discussions, we uncovered only a few hypotheses regarding how the NSPC program will result in direct customer market effects. Though perhaps unsurprising given the focus on EESPs throughout this program's development, the lack of focus on how the program reduces customer-level barriers to energy efficiency is troubling in that *end users are the demand engine upon which all self-sustaining changes in the marketplace are dependent*. Another reason for the lack of customer focus could be the belief that EESPs will reduce customer barriers themselves. The problem with this argument is that it, if true, it begs the question as to why these barriers were not *previously* overcome by EESP marketing activities. Certainly, it can be hypothesized that program-induced changes in EESPs will enable the EESPs themselves to more effectively reduce customer-level barriers. But the specific mechanisms and sequence of events by which this would occur have not yet been well articulated. It may also be the case that the complexities of the 1998 program planning process, the quest for consensus across stakeholder groups, and the challenging time constraints may have led to a design process that was more simplified than any of the parties would have liked. In any case, the customer-related market effects for which we have encountered or developed hypotheses are provided below.

Improved confidence in EESP as credible energy-efficiency service provider. Several customer barriers, including performance uncertainty and asymmetric information, may be associated with some customers' reluctance to do business with EESPs. Some of this reluctance may be related to the fact that, in California, customers have been able to obtain a variety of energy-efficiency services rather easily from regulated utilities for many years.¹⁴ The program may increase end users confidence in working with EESPs to the extent that it succeeds in weaning customers from relying on regulated utilities for energy-efficiency services and, instead, encourages and provides program structures that lead customers to work directly with EESPs. This process will only self-reinforce, of course, if these customers have positive business experiences with the EESPs as part of their program experience.

Increased confidence in measure savings. Performance uncertainty is a frequently cited barrier associated with customers' reluctance to invest in cost-effective energy-efficiency opportunities. Performance contracting and site-specific measurement and documentation of savings have been

¹⁴ Many customers were no doubt accustomed to obtaining such service seemingly free of charge, although, of course, their costs have always been spread among ratepayers.

hypothesized as means by which customers can both be convinced that savings are genuine and become knowledgeable about (and comfortable with) the methods used to demonstrate such savings.

Increased awareness and knowledge of the benefits of non-lighting energy-efficiency opportunities. Whether customers are aware of and knowledgeable about energy-efficiency opportunities are critical aspects of their process toward investing in such opportunities. Certainly, one can argue that customers have been exposed to a significant amount of energy information in California as part of the regulated utilities' DSM programs. Nonetheless, research shows that increasing customer awareness and knowledge is difficult in practice and often transitory in nature. Awareness and knowledge often vary greatly by market segment as well. Awareness of the benefits of energy-efficient lighting can be hypothesized to be higher than that for other end uses given the high levels of efficient component penetration¹⁵ (mostly T8 lamps and electronic ballasts) versus the lower penetration levels that have been observed for HVAC and other non-lighting end uses.

The NSPC designers have sought to address this discrepancy directly by providing higher incentives for savings from non-lighting measures than are provided for the lighting end use. The use of end-use differentiated incentive levels may encourage EESPs, end users, and other market actors to seek a greater proportion of non-lighting efficiency savings than has been the case in previous utility rebate programs. This may lead to a program-induced, short-term increase in awareness and knowledge of the benefits of these non-lighting efficiency solutions. It is less clear whether this increase in awareness and knowledge would be sustainable in the long-term without the reduction of a number of other market barriers. This process is most likely to self-reinforce and become sustainable if customers go on to make investments in the measures for which they have become aware and knowledgeable (which may require concomitant reductions in other barriers), and then are satisfied with the results that they achieve.

4.3.4 Possible Market Effects - Manufacturers and Other Businesses (Distributors, Contractors, Designers)

Most of the hypothesized market effects of the NSPC for manufacturers and other businesses are indirect program effects that result from these vendors' responses to increases in the demand for energy-efficient products and services. These linkages are shown in Figure 4-1 and described below. To begin with, end-use incentives that reduce the costs of an efficient product to the point at which large numbers of end users' investment criteria are met can induce increases in end-user demand for such products, which, in turn, may result in manufacturers having to increase production. Increased manufacturer production may then lead to economies of scale and production rationalizations that result in decreases in the product's production cost. These production cost decreases may then be passed along to end users by distributors, installers, and

¹⁵ PG&E and SDG&E Commercial Lighting Market Effects Study, prepared by XENERGY Inc. for PG&E and SDG&E, July 1998.

EESPs. These reduced prices to end users may then stimulate even more demand for the product and set about another cycle of the feedback loop.

In addition to the production cost/end-user demand feedback loop, there is another possible positive feedback loop that could occur between supply-side actors' promotion and specification practices and end-user demand. As demand for the product increases, distributors, designers, and installers are likely to begin promoting and specifying the product in order to expand or maintain their competitive position. This change in specification and sales practices may then increase end-user demand further, initiating another positive feedback mechanism. These other supply-side vendors may receive their demand signals directly from customers or through EESPs that seek to "own" the customer relationship.

Another change that the program may initiate is to change the business strategies of distributors, contractors, and designers toward integrating or diversifying into EESP functions. This could occur in order to capture program benefits or to compete with EESPs with whom these suppliers may vie for customers' attention. Thus, the financial incentives and other program features may lead not only EESPs but other market actors to develop new efficiency-based products and services.

The upstream portion of the market model shown in Figure 4-1 has been at the heart of numerous efforts by governments, utilities, and private industry efforts to initiate "take-offs" of new products for decades. Evidence from our recently completed *PG&E and SDG&E Commercial Lighting Market Effects Study* indicates that this approach may have worked in the case of T8 lamps and electronic ballasts. The likelihood of such secondary market feedbacks occurring as a result of the NSPC program, however, are much more unclear. Compared to the very focused and relatively massive intervention that characterized California utilities T8 lamp and electronic ballast rebate programs, the current structure and size of the NSPC does not lend itself to the same types of upstream market effects.

The market barriers addressed by the program are discussed in the next section.

4.3.5 Market Barriers Potentially Addressed - End Users

In order to expand upon the listing of market barriers presented in Figure 4-2, we present in Table 4-2 a summary of our assessments of the extent to which the NSPC addresses each of the market barriers outlined in the *Market Transformation Scoping Study*. In Table 4-1, we present short summaries of the market barrier definitions from the study as a reference. Our focus in this section is on end-user level barriers (a discussion of EESP-level barriers is provided in the following section). We also provide, in Table 4-2, an initial assessment of the role played by EESPs in addressing each barrier *prior to* (as an initial proxy for *independent of*) the program. We believe that it is critical to separately analyze program effects as distinct from the EESP's historic and evolving role in the energy marketplace.

Based on the initial hypotheses with respect to each of the barriers presented in Table 4-2, we believe that the barriers with the greatest relative likelihood of being reduced by the NSPC program include the following:

- Information or Search Costs,
- Performance Uncertainty,
- Asymmetric Information and Opportunism,
- Hassle or Transaction Costs, and
- Product or Service Unavailability.

We offer the following additional observations on the barriers discussion provided in Table 4-2:

- As shown in the list of five barriers above, the current version of the NSPC appears to address significantly a small but important subset of end-user barriers. However, many of these barriers are hypothesized to be mitigated only *indirectly*, and the strength of these linkages is uncertain and is likely contingent upon significant changes in the role of EESPs as barrier “mitigators.”
- The current version of the NSPC does not directly address several important barriers, most notably, macro-level barriers such as organization practices and bounded rationality. These barriers may be much more important than those that the program does seek to address because they cut across energy-efficiency measures. That is, barriers that are related to specific measures (e.g., EMS performance uncertainty, the availability of high-efficiency packaged HVAC units, inefficient lighting design practices, etc.) could be eliminated and still not lead to significant changes in the penetration of these measures because of the continuation of decision making practices that are inappropriately or unnecessarily biased against energy-efficiency investments.
- It is important to note that EESPs have faced all of these end user barriers since the beginning of the energy services industry over two decades ago. It is also true that traditional utility DSM programs provided a double-edged intervention into efficiency markets from the perspective of EESPs. On the one hand, many EESPs were able to use utility rebate programs to support projects that they initiated with end users; while, on the other hand, utility programs served as an easily accessible, virtually free alternative source of energy-efficiency information and services that competed directly with EESPs for customers’ business and attention. The extent to which these programs might have inhibited EESPs’ ability to reduce end-use level barriers remains to be seen.

Table 4-1. Summary of Market Barrier Definitions

Barrier	Description
Information or Search Costs	The costs of identifying energy-efficient products or services or of learning about energy-efficient practices, including the value of time spent finding out about or locating a product or service or hiring someone else to do so.
Performance Uncertainties	The difficulties consumers face in evaluating claims about future benefits. Closely related to high search costs, in that acquiring the information needed to evaluate claims regarding future performance is rarely costless.
Asymmetric Information and Opportunism	The tendency of sellers of energy-efficient products or services to have more and better information about their offerings than do consumers, which, combined with potential incentives to mislead, can lead to sub-optimal purchasing behavior.
Hassle or Transaction Costs	The indirect costs of acquiring energy efficiency, including the time, materials and labor involved in obtaining or contracting for an energy-efficient product or service. (Distinct from search costs in that it refers to what happens once a product has been located.)
Hidden Costs	Unexpected costs associated with reliance on or operation of energy-efficient products or services - for example, extra operating and maintenance costs.
Access to Financing	The difficulties associated with the lending industry's historic inability to account for the unique features of loans for energy savings products (i.e., that future reductions in utility bills increase the borrower's ability to repay a loan) in underwriting procedures.
Bounded Rationality	The behavior of an individual during the decision-making process that either seems or actually is inconsistent with the individual's goals.
Organization Practices or Customs	Organizational behavior or systems of practice that discourage or inhibit cost-effective energy-efficiency decisions, for example, procurement rules that make it difficult to act on energy-efficiency decisions based on economic merit.
Misplaced or Split incentives	Cases in which the incentives of an agent charged with purchasing energy efficiency are not aligned with those of the persons who would benefit from the purchase.
Product or Service Unavailability	The failure of manufacturers, distributors or vendors to make a product or service available in a given area or market. May result from collusion, bounded rationality, or supply constraints.
Externalities	Costs that are associated with transactions, but which are not reflected in the price paid in the transaction.
Non-externality Pricing	Factors other than externalities that move prices away from marginal cost. An example arises when utility commodity prices are set using ratemaking practices based on average (rather than marginal) costs.
Inseparability of Product Features	The difficulties consumers sometimes face in acquiring desirable energy-efficiency features in products without also acquiring (and paying for) additional undesired features that increase the total cost of the product beyond what the consumer is willing to pay.
Irreversibility	The difficulty of reversing a purchase decision in light of new information that may become available, which may deter the initial purchase, for example, if energy prices decline, one cannot resell insulation that has been blown into a wall.

Table 4-2. EESPs, the SPC, and End-User Market Barriers

Market Barrier	Role/Action of EESP (Prior to SPC)	How Program Might Mitigate Barrier
Information or Search Costs	Part of EESP's value is to reduce this to customer. But some customers may be uncomfortable relying on EESPs for this if the customer distrusts the asymmetric information difference between themselves and the EESP.	An indirect effect could occur to the extent that program raises end-users' awareness of EESPs as sources for reducing information costs and customers begin to use EESPs in this capacity. See also Asymmetric Information.
Performance Uncertainties	EESP's typically use M&V to allay customer concerns. All uncertainties cannot be eliminated because of effects on savings of production, occupancy, and other non-constant factors.	Inclusion of M&V requirement and utility/CBEE sponsorship adds element of third-party certification/credibility effect. Still, not all uncertainties likely to be eliminated.
Asymmetric Information and Opportunism	EESPs historically must convince customers that their asymmetric advantage will be used to the customer's benefit or an agreed upon shared benefit. Customers are not always convinced.	End users experience with program M&V may increase their knowledge and, concomitantly, confidence in negotiating with EESPs in the future. In addition, as stated above, increased competition and utility/CBEE sponsorship and project review could lead to more comfort with information provided by final vendors.
Hassle or Transaction Costs	EESP may eliminate some or all of these, but may also add new costs with respect to their own service contracts.	Utility/CBEE sponsored contract may standardize process and reduce added costs associated with the EESP's contract. At the same time, program requirements also may increase transaction costs.
Hidden Costs	See Performance Uncertainties and Asymmetric Information above.	See Performance Uncertainties and Asymmetric Information above.
Access to Financing	Primary focus of EESPs, particularly ESCOs engaging in performance contracting. Significance of barrier is unclear. Some large customers have policies not to allow outside vendors to finance projects on a shared savings basis (concern over losing too big a share of savings to the EESP in the process and paying premiums for financing).	SPC payments themselves reduce the need for financing, but this is not a sustainable effect. No other specific aspect of the program directly affects financing. Indirect effect may be increased ease of access to commercial financing (both EESPs and customers) because of utility/CBEE sponsorship and project review/M&V.
Bounded Rationality	An historic marketing and communications challenge that EESPs overcome or don't to varying degrees.	Utility/CBEE sponsorship and increased EESP market presence may provide indirect influence.

(Continued)

Table 4-2 (Continued). EESPs, the SPC, and End-User Market Barriers

Market Barrier	Role/Action of EESP (Prior to SPC)	How Program Might Mitigate Barrier
Organization Practices or Customs	See Bounded Rationality above.	An indirect effect could arise via the program's reduction of other market barriers. For example, if more projects are undertaken because of reduced performance uncertainty, good experiences with these projects could change an organization's broader practices and policies towards efficiency investments.
Misplaced or Split incentives	EESPs may try to convince multiple decision-makers to align interests or, if the sales investment of such an approach is too high, avoid such customers.	Indirect effect may be for EESPs to broker deals between "split" parties.
Product or Service Unavailability	EESPs may be able to address short-term availability of existing products. Individual EESPs less able to effect new product development, though some may engage in product development themselves.	Indirect effect possible in same manner as traditional customized type incentive: bounty on savings can stimulate product/service development and early sales.
Externalities	Limited ability/incentive to internalize.	No mechanism hypothesized.
Non-externality Pricing	Limited ability/incentive to internalize (for example given). Full service EESPs might price below cost on commodity side (to capture new customers), thereby reducing return on efficiency investments.	No mechanism hypothesized.
Inseparability of Product Features	See Product or Service Unavailability and Asymmetric Information and Opportunism above.	Indirect effect may be similar to product and service unavailability in that increased demand for energy-efficiency may lead suppliers to more appropriately unbundle products by providing high-efficiency alternatives that are alike with respect to all other product features.
Irreversibility	Like several of the above, EESPs historically must address this through their marketing and sales processes.	No mechanism hypothesized..

4.3.6 Market Barriers Potentially Addressed - EESPs

We have also analyzed the *EESP-level* market barriers that the program may address. We examined each of the barriers in the *Market Transformation Scoping Study* with respect to how these barriers might be relevant to EESP's businesses themselves. We found that only a small subset of the barriers were relevant to EESPs. These barriers, their associated relationship to EESPs, and hypotheses on the mechanism by which the program intervention might mitigate the barriers, are shown in Table 4-3.

Based on our assessment of the possible EESP barriers provided in Table 4-3, we believe that the following are the most relevant for evaluation purposes:

- Transaction Costs,
- Access to Financing, and
- Organization Practices or Customs.

There are significant transaction costs associated with marketing, selling, and negotiating energy-efficiency products and services. Both previous research and observance of market behavior indicate that most EESPs tend to target large customers in a subset of major market segments for performance contracting and other energy-efficiency services. This is, for the most part, a natural and rational reaction to the fact that prospective per project energy savings (and associated value-added revenues) from smaller customers are low and that those segments for whom it has been found that selling efficiency services is more difficult require higher selling costs because of lower probabilities of capture.¹⁶ Providing assistance to EESPs to aid them in developing more effective strategies for cost-effectively reaching such customers may be an important program intervention, to the extent that increasing the penetration of energy-efficiency products and services to historically under-served customers is an energy policy objective (associated with equity or any other rationale). We provide some hypothesized mechanisms by which the program might do this in Table 4-3.

¹⁶ A similar problem may currently exist in California's Direct Access electricity market as well since most deals have been struck with large, multi-site customers. According to one theory, ESPs will need to work with or buy other market actors that have reasons to interface with smaller customers in order to capture economies-of-scale across energy and, perhaps, other services, and thereby reduce *per service* customer acquisition and support costs.

Table 4-3. Market Barriers Relevant to EESPs within NSPC Framework

Market Barrier	EESP Barrier	How Might Program Mitigate Barrier?
Performance Uncertainties	EESPs may have their own doubts about a measure's performance and may not have the funds to test its effectiveness in the field.	EESPs can use funds to offset M&V costs for measures with which they want to become more confident. End-use incentives may encourage non-lighting projects, which may lead to reduction in EESPs uncertainty over non-lighting impacts (again via M&V results). Reduced EESP uncertainty may lead to increased marketing of non-lighting efficiency projects.
Hassle or Transaction Costs	An EESP corollary would be the costs associated with customer acquisition. These include marketing, sales, proposals, and closing (including contract negotiation).	For EESP project sponsors, incentive funds may be applied to whatever aspect of the project an EESP chooses. Funds may thus offset some customer acquisition costs and allow testing of new methods to find ways to efficiently reduce such costs. In addition, standardized M&V and aggregation rules could be used to focus EESPs on developing improved acquisition strategies for smaller customers. Finally, CBEE sponsorship and contract with EESP could increase customer confidence in project benefits and perhaps reduce time and expense associated with EESP/customer contract process.
Hidden Costs	Some performance contracts and other ee service contracts put EESPs at risk for hidden costs.	Program funds may ease the blow of unexpected losses from hidden costs and allow EESPs to improve knowledge of these and minimize such impacts on future projects.

(Continued)

Table 4-3 (Continued). Market Barriers Relevant to EESPs within NSPC Framework

Market Barrier	EESP Barrier	How Might Program Mitigate Barrier?
Access to Financing	EESPs must compete for attractive financing terms with other businesses. Competition for such funds may be both internal (business units compete for corporate funds and financing packages) and external (EESPs must compete with other business for attractive lending rates from lending institutions).	Program funds could be used to compensate, temporarily, for insufficient funding. Resulting market successes could then lead to easier access to private sector funding. Program funds may also temporarily interest lending institutions in ee market and improve terms to EESPs. A related mechanism could be that the program aids EESPs with cash flow or other funding problems by allowing them to get more jobs, thereby improving cash flow and perhaps creating a critical mass of business that forms an improved basis for a sustainable market presence after the intervention is withdrawn.
Organization Practices or Customs	An example of an EESP corollary of this could be that the EESP or its parent business has a very short planning horizon. For example, owners or investors whose principal goals are short-term, quarterly profits, may not be interested in investing in ee businesses that are nascent and require more time to develop and provide financial returns. At the same time, it is important to recognize that private markets also have means to address such problems through venture capital, stock offerings, and other risk/reward structures.	Program funds and related demonstration of the market for ee services could help align organization practices with ee market opportunity. Program-stimulated market demand could aid EESPs in developing longer term business plans or help attract additional investment that is aligned with sustainable EESP business models. Thus, the program could help EESP's to buy some time necessary to move from short-term survival focus, to developing more effective longer-term business strategies.
Imperfect Competition	Imperfect competition may occur when the underlying requirements of a fully competitive market, necessary for economic efficiency, are significantly lacking. Some manifestations of imperfect competition are price collusion and predatory pricing.	Program design feature explicitly limits individual EESP market share. Program seeks to reduce transaction costs, which if sufficiently high, could contribute to industry consolidation.

The access to financing and organization practices and customs barriers are the other two key barriers that we believe are relevant to EESPs. EESPs may face difficulties in obtaining funding from parent corporations, external lenders, or investors. Funding and investment constraints may limit the ability of EESPs to successfully develop, market, and deliver value-added energy-efficiency products and services. Similarly, organizational practices could be focused on risk averse business strategies that produce short-term results aimed at maintaining business survival, rather than the development of more innovative strategies that may be higher risk and require longer periods to develop. By stimulating end-user demand, increasing EESP-customer contacts and business experiences, and possibly improving EESP cash flow, the program may aid EESPs in obtaining continued or increased investment and developing more effective strategies and services.

Of course, as discussed with respect to Figure 4-1 at the outset of this section, in order for reductions in any the barriers discussed above to be lasting, a number of other changes are likely to be necessary as well. Short-term program effects are likely to become lasting effects only if fundamental changes occur in the equilibrium between the supply and demand for energy efficiency. Thus, “aiding” EESPs in the short-term is unlikely to result in sustainable market changes if the aid is not translated into improved business practices and concomitant reductions in end user market barriers as well.

It is important to recognize that we believe that a number of the market barriers defined in the *Market Transformation Scoping Study* are less relevant to EESPs and other supply-side actors (sellers) than they are to customers (buyers). This is because the standard of what constitutes a market barrier for a firm *whose business it is to provide energy-efficiency services* is different from the standard that would be applied to an end user whose *business revolves around something other than energy efficiency*. A key reason for this is that the market itself already plays the role of providing discipline for suppliers *within* a particular business area (i.e., energy-efficiency services) by weeding out those firms that don’t properly align their business practices with customer needs. Thus, for example, although it may be difficult for EESPs to collect information on energy-efficient products and services, it is part of their core business to do so (and, in fact, something that may differentiate their services from competing EESPs).

Another factor limiting the number of EESP-level market barriers that we have identified is that some of the barriers faced by EESPs are redundant with barriers faced by customers. For example, some EESPs may face product unavailability or inseparability of product features from other suppliers in much the same way that customers do. The program mechanisms by which these barriers might hypothetically be reduced would be the same, however, for both EESPs and end users; thus, we have not repeated that information in Table 4-3.

Note that we have added a barrier to Table 4-3 that was not included in the *Market Transformation Scoping Study*, namely, imperfect competition. Imperfect competition may occur when the underlying requirements of a fully competitive market, necessary for economic efficiency, are significantly lacking. Brodley, 1987 has described economic efficiency as consisting of three components:

Production efficiency is achieved when goods are produced using the most cost-effective combination of productive resources available under current technology. Innovation efficiency is achieved by the invention, development, and diffusion of new products and production processes that increase social wealth (which is particularly important because the technological progress is the most important factor in growth of real output). Allocative efficiency is achieved when existing stock of goods and output are allocated through the price system to those buyers who value them most, in terms of willingness to pay.¹⁷

Some manifestations of imperfect competition are price collusion and predatory pricing. Price collusion may occur when one or a small number of firms with very high combined market share collude to set prices excessively above marginal costs. This may occur in situations where there are not a sufficient number of suppliers to produce genuine price competition or in markets where economies of scale tend to lead toward excessive industry consolidation. Predatory pricing is a specific form of pricing below cost defined by the Sherman Antitrust Act of 1890 that may lead to the demise of competitors or the inability of competitors to enter a market. If any barriers related to imperfect competition were found to exist in the energy efficiency markets under study, then mitigation of those barriers by the program should be considered a market effect. We do not currently have any evidence that any such imperfect competition exists, but a general assessment of the characteristics and extent of energy-efficiency related competition in nonresidential markets is within the scope of this study. Of course, a fully antitrust-type analysis, were one warranted, is not within the scope of this evaluation.

4.3.7 Confounding Factors

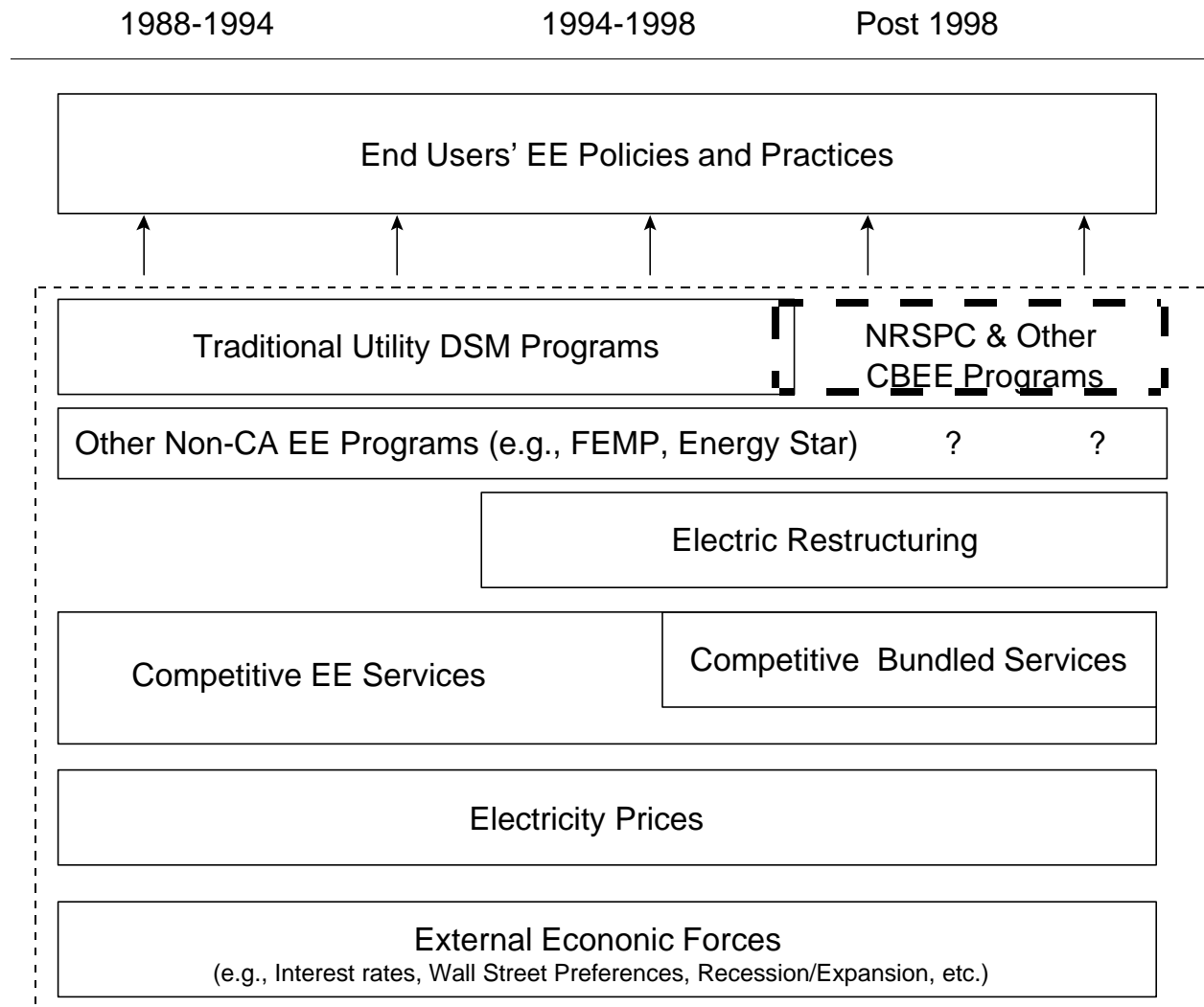
There are a number of confounding factors that this and future evaluations of the NSPC will have to address in order to isolate changes in the marketplace that can be convincingly attributed to the NSPC intervention. A number of these are shown longitudinally in Figure 4-3, namely:

- Prior utility rebate and information programs.
- Energy efficiency programs originating outside of California, e.g., EPA's Energy Star, DOE's Motor Challenge, other utility and regional market transformation programs, federal energy management policies and performance contracting vehicles, etc.
- Electric restructuring, in particular, the rules governing newly opened direct access markets in California.
- Changes in electricity prices and other economic factors over time.

Though these factors may seem imposing at first glance, they represent an evolution, not a revolution, with respect to the challenges faced by program evaluators over the past fifteen years. The evaluation design for this program includes both cross-sectional and longitudinal surveys, which were designed to control for confounding factors as well as possible.

¹⁷ Brodley, J. 1987. "The Economic Goals of Antitrust: Efficiency, Consumer Welfare, and Technological Progress." New York University Law Review: 60:1020-1053. November.

Figure 4-3
Conceptual Overview of Current and Historic Influences on End Users' Energy-Efficiency Policies and Practices



4.4 LINKING HYPOTHESES, MARKET INDICATORS, AND RESEARCH ACTIVITIES

In order to document and explicitly summarize the relationship between the various primary research activities and the NSPC program hypotheses, we created a matrix of these two critical dimensions of this study. This matrix is presented in Table 4-4. An important purpose of developing this matrix was to ensure that all of the survey instruments were designed in a coordinated and complementary manner. The remainder of this subsection describes the key parts of the table.

In the first left-most column of Table 4-4, we list the major *hypotheses* and issues underlying the NSPC program. The hypotheses in the table are organized by type of market actor: EESPs, End Users, and Other. In the next column of the table, we summarize a set of specific *market indicators* that were constructed to aid in the development of all of the survey instruments necessary for the current evaluation. The market indicators differ slightly from the generalized hypotheses in that they provide articulation of specific measurements that will be made in the current study and future evaluations. Analyses of changes in these metrics will serve as empirical pieces of evidence for determining whether or not the hypotheses in question are supportable or should be rejected.

The remaining columns all represent different elements of the primary research activities being conducted in the current evaluation (e.g., customer interviews, surveys, EESP interviews, administrator interviews, and database analyses). Under each column and aligned with each market indicator appears either a “1,” “2,” or no entry. A “1” indicates that the source is designed to be of primary importance to developing information on the indicator, while a “2” indicates that the source is likely to provide some information on the indicator but will be of more secondary importance. No entry indicates that we the source has not been designed to provide any information on the particular indicator or topic.

Because of the number of hypotheses and indicators associated with the NSPC, a great deal of effort went into designing the survey instruments to provide as much primary information as possible. Nonetheless, there are a number of practical constraints upon how much information can be obtained from interviews of the type utilized for this study. Constraints are particularly acute when dealing with non-participants, such as the customers that make up the baseline element of this evaluation, because these organizations have little incentive to invest more than a small amount of their time responding to surveys for which they see little direct benefit. The baseline survey instrument was therefore designed to take approximately twenty minutes to complete. This constraint was not placed on our design of the participant interview guides. Because of the direct benefits that they have received with respect to the NSPC program incentives, participants were expected to cooperate with longer interviews. The interviews with participant customers and EESPs presented in Sections 3 and 4 of this report generally average approximately one hour in length.

Table 4-4. Survey Issues Matrix (1 indicates source is of primary importance for indicator, 2 indicates secondary importance)

Hypotheses	Market Effects Indicators	Customers/End Users		EESPs		Utility Admin.	Prog. Dbase
		Baseline Survey	Participant	Part.	Non-Part.	In-Depth	
EESPs 1. <i>Development of improved marketing and sales skills</i>	(a) Changes in marketing and sales practices - e.g., branding, advertising, marketing strategies that increase level/ profitability of EE services			1	1		2
	(b) Changes in targeting that lead to reductions in transaction costs (more offers to under-served segments)	1	1	1	1		
2. <i>Changes in business strategies</i>	<i>Not known a priori, hypothetical examples:</i>						
	(a) Successful bundling of both EE products and energy commodity	1		1	1		
3. <i>Energy-efficiency product and service innovation</i>	<i>Not known a priori, hypothetical examples:</i>						
	(a) Increase in # & type of EE products & services	2		1	1		
4. <i>Changes in breadth and depth of EESP industry</i>	(b) Expansion and innovation of performance contracting	1	1	2	2		1
	(a) Increase in # of EESPs			1	1		
5. <i>Improved M&V Capabilities</i>	(b) Increased market share relative to other non EE firms	1	1				
	(c) Increase in breadth of EESP types			1	1		
	(a) Increase in # of EESPs doing own M&V		1	1	2	2	
6. <i>Increased interest in importance and viability of performance contracting as long-term strategy</i>	(b) Improved knowledge and capability v-a-v M&V.		1	1	2		
	(c) Increased M&V innovation			2			
	(a) Increase in firms promoting and offering perf. contracting	1	1				
	(b) Increase in market share of performance contracting						

(Continued)

Table 4-4 (continued)
Survey Issues Matrix (1 indicates source is of primary importance for indicator, 2 indicates secondary importance)

Hypotheses	Market Effects Indicators	Customers/End Users		EESPs		Utility Admin.	Prog. Dbase
		Baseline Survey	Participant	Part.	Non-Part.	In-Depth	
CUSTOMER/END USER 1. <i>Improved confidence in EESP as credible energy-efficiency service provider.</i>	(a) Increased credibility rating of EESPs relative to regulated utilities	1	1				
	(b) Reduced reliance on regulated utilities for EE products & services	1	1				
	(c) Increase in incidence of repeat customers for EESPs			2	2		
2. <i>Increased confidence in measure savings.</i>	(a) Increased reported confidence in expectations of measure savings	1	1				
3. <i>Increased awareness and knowledge of the benefits of non-lighting energy-efficiency</i>	(a) Increased or sustained levels of awareness and knowledge of EE opportunities	1	1				
4. <i>Increase in role of energy-efficiency in energy-related procurement practices</i>	(a) Increased use of financial criteria for EE decisions	1	1				
	(b) Increased consistency between energy and non-energy investment criteria	2					
5. <i>Increased demand for EE products and services, especially non-lighting</i>	(a) Increase in penetration rate of EE products and services, especially non-lighting	1	1				
6. <i>Increased knowledge and awareness of performance contracting</i>	• Increase in measured awareness of performance contracting and ability to identify features	1	1				
	• Increase in penetration of performance contracting in end user market						

(Continued)

Table 4-4 (continued)
Survey Issues Matrix (1 indicates source is of primary importance for indicator, 2 indicates secondary importance)

Hypotheses	Market Effects Indicators	Customers/End Users		EESPs		Utility Admin.	Prog. Dbase
		Baseline Survey	Participant	Part.	Non-Part.	In-Depth	
OTHER BUSINESSES							
1. <i>Increased specification of EE products by distributors, designers, and installers</i>	(a) Increase in # of Other market actors that target EE opportunities (b) Increase in design and specification of EE measures			2	2		2
2. <i>Change of business strategies of distributors, designers, and installers towards integrating or diversifying into EESP functions.</i>	(a) Increase in # of Other market actors that offer EE products and services, including performance-based contracts			2	2		
3. <i>Improved confidence in Other market actors as credible energy-efficiency service providers</i>	(a) Increased credibility rating of Other market actors relative to regulated utilities	2	2	2	2		
4. <i>Improved M&V Capabilities</i>	(a) Increase in # of Other market actors doing own M&V (b) Improved knowledge and capability v-a-v M&V protocols		2 2		2	2	

(Continued)

Table 4-4 (continued)
Survey Issues Matrix (1 indicates source is of primary importance for indicator, 2 indicates secondary importance)

General Issues	Detailed Issues	Customers/End Users		EESPs		Utility Admin.	Prog. Dbase
		Baseline Survey	Participant	Part.	Non-Part.	In-Depth	
Other Research Issues							
1. <i>Percent of Free-riders</i>	(a) Use a modified version of site-specific net-to-gross estimation.	2	1	2	2		
2. <i>Process issues</i>	• See 8/16 Report for list	2	1	1	1	2	1
3. <i>Policy issues</i>	• See 8/16 report for list	2	1	1	1	2	1
4. <i>Program Database Issues</i>	• See 8/16 Report for list						1

In this section, we present results from interviews conducted with a sample of nonresidential establishments in California and throughout the country. The purpose of the interviews was to obtain baseline information on topics relating to a variety of establishment and energy efficiency characteristics, behaviors, and attitudes. A large percentage of the questions asked on these surveys were developed based on the hypotheses and indicators discussed in the Program Theory section of this report (Section 4). The objective of this survey is not only to characterize the current market, but also to put in place market indicators that can be re-measured in the future to determine whether any changes have occurred in the marketplace that might be attributable to the NSPC or related programs. The relationship between the baseline results presented in this section and the hypotheses and indicators developed in Section 4 is addressed in Section 10 of this report, which discusses near-term market effects and related future measurement issues.

This section is organized into the following subsections:

- Key Findings (Section 5.1)
- Summary of Sampling Process (Section 5.2)
- Establishment Characteristics (Section 5.3)
- Familiarity with and Use of Performance Contracting (Section 5.4)
- Energy Program Participation and Efficiency-Related Improvements (Section 5.5)
- Electric Supply Choices and Relative Role of Energy Efficiency (Section 5.6)
- Energy-Related Decision Making (Section 5.7)
- Awareness and Assessment of Specific Types of Energy Service Providers and Service Offers (Section 5.8)
- Self-Reported Efficiency-Related Knowledge and Barriers (Section 5.9)
- Awareness of CA Program Restructuring and NSPC Program (Section 5.10)
- Small Establishment Energy Efficiency (Section 5.11)

The baseline survey instruments are provided in Appendix E, and a complete tabulation of the baseline survey results are presented in Appendices G and H. In order to facilitate cross-referencing of the results with the survey instrument, the survey question number is included in parentheses in each of the tables and figures presented in this section.

5.1 KEY FINDINGS

A summary of the key findings from the baseline survey results is presented in this section. Key findings include the following:

- ***End-user awareness of performance contracting is moderate.*** When weighted by energy use, approximately 30% of CA and 34% of non-CA establishments are aware of energy performance contracting (EPC). The difference is not statistically significant. Awareness levels vary greatly by market sector and size strata.
- ***About one-fourth of the market received performance contracting offers over the past two years. Net two-year penetration of accepted offers was 3.5%.*** The energy-weighted percentage of customers that report they *received at least one EPC offer in the last two years* was 27% in CA and 22% in non-CA. The difference is not statistically significant. Strong differences exist between sectors and size strata.
 - ⇒ Among those establishments that received EPC offers, only a small percentage, roughly 13% in both markets, resulted in *signed agreements*. Institutional customers were most likely to sign final contracts.
 - ⇒ Combining the above results, the net energy-weighted fraction implementing performance contracts over the past two years in California is estimated to be 3.5%.
- ***No firm appears to dominate the performance contracting industry, either nationally or in California.*** The market is characterized by diffusion among service providers.
- ***Four firms appear to have captured the majority of the nonresidential direct access market.*** Based on self-reports of the supplier selected, four ESPs account for an estimated 70% market share (energy-weighted). The percentage of establishments in California that report they *switched to a new electricity supplier* varied from 1% for the smallest customers to 31% for the largest size group. These results closely match the population figures reported by the CPUC for Direct Access Service Requests for 1998.
- ***Most customers considered other factors in addition to price in their choice of electricity provider, but energy efficiency services do not yet appear to be a differentiator.*** Customers currently *expect* electricity providers to be knowledgeable and able to provide energy-efficiency services, but this is not a differentiating factor in their final decision.
- ***The CA and non-CA markets are fairly similar on average, but differ by size group.*** The CA and non-CA samples appear to be *fairly similar with respect to several potential indicators* of energy-efficiency behavior including the presence of energy managers, whether or not separate budgets are set aside for efficiency improvements, and whether or not investment analyses are applied to energy-related equipment decisions. Large customers in California appear to be somewhat more efficiency-oriented, while for the smallest customers the results are reversed (i.e., non-California customers appear to be more efficiency-oriented). This latter result may be an anomaly and is discussed in Section 5.10.

- ***Energy efficiency services are widely marketed in California.*** On an energy-weighted basis, 44% of the CA and 35% of the non-CA markets reported they had been *approached* in the past two years by *companies offering to provide services to improve energy efficiency*. The difference is statistically significant.
- ***Utilities are considered the most credible source of efficiency-related information.*** Respondents reported that electric utilities were *the most credible sources* of efficiency-related information and were the overwhelming choice of who they would “call first” with efficiency-related questions. ESCOs scored much lower on the credibility rating and were rarely identified as the entity to call first.
- ***No major systematic differences appear between the CA and non-CA markets with respect to self-reported barriers to efficiency.*** Between potential barriers, *uncertainty over estimated savings, uncertainty over information provided by proposing firms, the time and cost associated with firm selection and contracting, and the time it takes to become adequately informed* are the highest rated barriers.
- ***Awareness of the NSPC Program in 1998 was low.*** Only 16% of customers (energy weighted basis) were *aware of the 1998 NSPC Program*. NSPC awareness varied by size from 6% for the smallest to 40% for the largest size group.

5.2 SUMMARY OF SAMPLING PROCESS

A decision was necessary at the outset of this study regarding whether to use utility customer information systems as the population frames for this study or to use proprietary business census databases such as Dun and Bradstreet’s MarketPlace (D&B) product. Based on our experience on previous, related studies, we chose to work with the D&B product as the population frame for our samples for reasons described in Section 12.

The customers included in the sample are all nonresidential customers except agricultural. These customers were mapped by primary SIC code into six major sectors. These sectors were selected based on past experience analyzing which segments explain most of the observed variation in customers’ decision-making patterns for energy efficiency. The six sectors are:

- Office
- Retail
- Institutional
- Other Commercial
- High Energy Intensity Industrial
- Low Energy Intensity Industrial

Each business type was divided into four size strata: (1) small, (2) medium, (3) large, and (4) very large based on estimated energy usage.

The California population frame of interest for this analysis comprises the SCE, SDG&E, and PG&E service territories. The non-California comparison sample comprises the entire lower 48 United States with California subtracted.

The surveys were administered in November and December of 1998. A total of 515 California surveys and 499 non-California surveys were conducted. The distribution of the actual surveys completed by sector and size strata are shown for both markets in Table 5-1.

Table 5-1
Distribution of Completed Surveys

California Sample					
	Strata				
Sector	1	2	3	4	Total
Office	18	20	13	5	56
Retail	17	29	21	0	67
Institutional	7	26	29	31	93
Other	27	49	31	12	119
High Industrial	5	33	46	7	91
Low Industrial	7	28	41	13	89
<i>Total</i>	<i>81</i>	<i>185</i>	<i>181</i>	<i>68</i>	<i>515</i>
Non-California Sample					
	Strata				
Sector	1	2	3	4	Total
Office	16	18	10	5	49
Retail	22	33	18	2	75
Institutional	10	26	29	24	89
Other	38	44	28	13	123
High Industrial	5	30	43	4	82
Low Industrial	3	27	38	13	81
<i>Total</i>	<i>94</i>	<i>178</i>	<i>166</i>	<i>61</i>	<i>499</i>

Additional details on the sampling processes utilized is provided in Section 12.

5.3 ESTABLISHMENT CHARACTERISTICS

A variety of questions were asked to help build a set of baseline establishment characteristics for both the CA and non-CA interviewees. The questions covered a number of topics, including the following:

- Electric distribution company for firm (CA only shown below)
- Interviewee job title
- Facility size in square feet

- Whether the firm owns or leases
- Type of energy bill payment arrangement
- Facility average monthly electric bill
- Type of facility location, and whether the facility is single or multi-site
- Number of years the firm has been at this facility
- Number of years since the facility was last retrofitted

The key establishment characteristics are discussed the following subsections. CA and non-CA samples are compared. Following the general comparison is a subsection discussing differences identified in the CA and non-CA samples for the smaller customer stratum (Stratum 1).

5.3.1 General Characteristics

Table 5-2 shows the energy-weighted distribution of California electric utilities for firms covered in the survey. Based on a comparison with utility electric usage data, PG&E customers are somewhat over-represented, while SCE and SDG&E customers are somewhat under-represented. The distribution of utilities is fairly constant across customer size strata.

Table 5-2
Electric Distribution Companies (SC2a)
Energy Weighted/California

Distribution Company	Strata				ALL
	1	2	3	4	
PG&E	57%	45%	44%	46%	47%
SCE	33%	35%	41%	42%	38%
SDG&E	4%	9%	9%	7%	8%
Other	5%	9%	5%	5%	6%
Do not know/refused	1%	2%	1%	0%	1%

Table 5-3 shows the distribution of facility size. The distribution is similar for the CA and non-CA sample. On a population-weighted basis, most of the surveyed establishments fell into the under 3,000-square-foot size range. However, most of the energy consumption is associated with the facilities that exceed 20,000 square feet.

Table 5-3
Size of Facility in Square Feet (EC2_1)

Square Foot Range	Population Weighted		Energy Weighted	
	CA	Non-CA	CA	Non-CA
0-999	29%	25%	9%	6%
1000-1,999	24%	16%	6%	5%
2,000-2,999	14%	9%	5%	4%
3,000-4,999	4%	11%	3%	6%
5,000-9,999	8%	8%	8%	7%
10,000-19,999	3%	9%	6%	7%
20,000-49,999	4%	5%	11%	11%
50,000+	5%	6%	40%	43%
Do not know/refused	10%	11%	11%	12%

Table 5-4 presents some additional data comparing the CA and non-CA samples on an energy-weighted basis. As the table indicates, the samples are fairly well matched in terms of key firm characteristics. Key highlights include:

- Survey respondents tended to be facility/energy managers for the larger establishments and owner/president/CEOs for the smaller establishments.** For CA, facility/energy managers account for 16% of the Stratum 1 survey respondents, increasing to 79% of the respondents in Stratum 4. About 55% of the Stratum 1 surveys were completed by owners/presidents/CEOs, decreasing to 1% of the Stratum 4 respondents. CFOs or other administrative staff accounted for about 15% to 30% of the responses in each size stratum.
- A larger number of the non-CA establishments owned their own facility.** This difference was fairly consistent for all sizes of firms. In California ownership levels ranged from 31% for the smallest establishments (Stratum 1) to 78% for the largest establishments (Stratum 4).
- The majority of establishments in leased space pay their own electric bills.** CA and non-CA differences occur mainly with the larger establishments, where nearly all CA entities pay their own bill, but less than 80% of the non-CA entities do so.
- A fairly wide distribution of monthly electric bills was present in both the CA and non-CA samples.** About 20% of the energy use addressed in the survey was consumed by customers with bills under \$500 per month and another 20% was consumed by customers with bills over \$50,000 per month.
- Single-location establishments accounted for about one-third of the energy use addressed in the survey.** Single-location organizations were most prominent in the smaller size stratum (about 80% of the Stratum 1 firms), but only 10% to 15% of the largest organizations (Strata 3 and 4) operated out of a single location.

- **CA establishments were more likely to have been in their current facility for a shorter period of time.** About 29% of the CA energy use was associated with establishments that have been in their current location for six years or less, as compared to 23% of the energy use for non-CA organizations. For both CA and non-CA, larger establishments were more likely to have been at one location for a longer period; in CA, only 15% of the Stratum 4 organizations had been in their current location for six years or less, as compared to 44% of the Stratum 1 organizations.
- **On an energy-weighted basis, about 40% of the surveyed establishments had completed major facility retrofits within the last three years.** The largest, Stratum 4, organizations were most likely to have retrofitted their facility in this time period (69% of CA and 47% of non-CA organizations) as compared to the smaller organizations where only 30% to 40% had completed retrofits in the same time period. Most of the “Don’t know” responses to this survey question are associated with smaller establishments and most often associated with those that occupy leased space.

As mentioned above and shown in Table 5-4, one of the primary differences between the CA and non-CA samples was facility ownership. Only 59% of the CA establishments owned their facility compared to 77% of the non-CA establishments (when viewed on an energy-weighted basis). Data for a couple of additional surveys were reviewed in an attempt to confirm this difference. While not directly comparable, findings of these other surveys were generally similar:

- The 1995 Commercial Buildings Energy Consumption Survey¹ (CBECS) data revealed that ownership rates in the Pacific Census District (that includes CA) were 10% to 15% lower than ownership rates in the remainder of the country. (CBECS is a national sample survey that collects statistical information on the consumption of and expenditures for energy in U.S. commercial buildings along with data on energy-related characteristics of the buildings; over 5,700 establishments are included in the survey.)
- PG&E’s most recently published Commercial Building Survey² showed that about 63% of PG&E establishments (on a square-footage-weighted basis) owned their facility as compared to the energy-weighted ownership rate of 59% for this survey.

Because facility ownership may affect an establishment’s propensity to undertake energy efficiency projects, own/lease differences in key energy efficiency indicators are explored further in Section 5.11.

¹ 1995 Commercial Buildings Energy Consumption Survey, U.S. Department of Energy, Energy Information Administration, January 1998.

² Commercial Building Survey Report, Pacific Gas and Electric Company, September 1997.

**Table 5-4
Characteristics of Surveyed Establishments**

Characteristic	Percent of Energy	
	CA	Non-CA
Job Title of Interviewee (SC1)		
Facility/energy manager	53%	46%
CFO/other administration	23%	24%
Owner/president/CEO	17%	19%
Other	7%	11%
Do not know/refused	<1%	0%
Own or Lease Facility (EC3)		
Own this space	54%	74%
Own and lease	5%	3%
Lease this space	39%	22%
Do not know/refused	1%	1%
Type of Payment Arrangement, Leased Space (EC4)		
Pay own electric bill	88%	76%
Part of lease agreement	12%	24%
Average Monthly Electric Bill (EC5_1)		
\$0-499	23%	21%
\$500-999	6%	7%
\$1,000-1,499	4%	4%
\$1,500-9,999	14%	16%
\$10,000-19,999	8%	5%
\$20,000-49,999	9%	9%
\$50,000+	20%	18%
Do not know/refused	16%	20%
Type of Facility Location (EC6)		
Only location	37%	34%
Branch/franchise	63%	66%
Number of Years in Facility (EC10_1)		
<4	15%	11%
4-6	14%	12%
7-10	15%	13%
11-20	23%	22%
21-30	14%	14%
>31	15%	26%
Do not know/refused	3%	2%
Number of Years Since Last Facility Retrofit (EC9b_1)		
<3	42%	37%
3-5	15%	15%
6-10	10%	11%
11-20	8%	12%
>21	5%	9%
Don't know/refused	19%	16%

5.4 FAMILIARITY WITH AND USE OF PERFORMANCE CONTRACTING

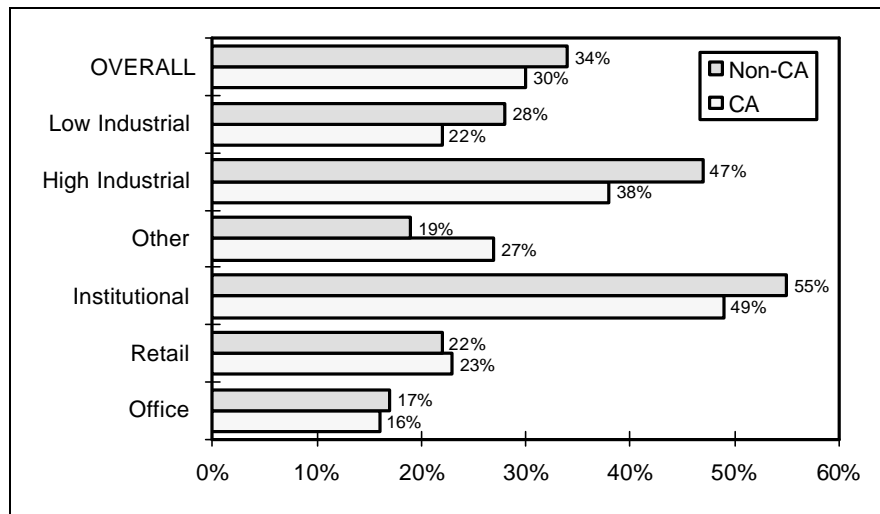
A variety of questions about performance contracting were addressed to both the CA and non-CA interviewees. The sequence of questions covered the following:

- Awareness of energy performance contracting (EPC),
- Respondent definitions of EPCs,
- Whether respondents had been approached with any EPC offers in the last two years,
- Whether they accepted any EPC offers and why they accepted or did not accept,
- Who they chose for their EPC if they did accept an offer and how satisfied they were, and
- The amount by which they estimated the EPC would reduce their energy consumption.

5.4.1 EPC Awareness

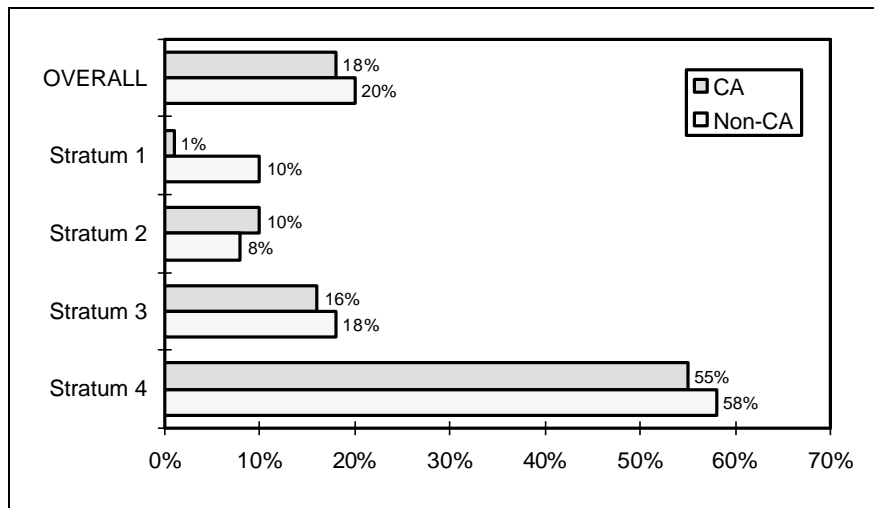
When weighted by energy use, approximately 30% of CA and 34% of non-CA establishments reported that they are aware of EPC, as shown in Figure 5-1. The difference is not statistically significant at the 90% confidence level. Not surprisingly, awareness levels vary greatly by market sector, from a high of 49% for institutional, to a low of 16% for offices in the CA market. The pattern of sector differences is very similar in the non-CA market. Differences are even more striking between customers of different sizes, with EPC awareness in CA ranging from 7% among the smallest customers to 71% among the largest.

Figure 5-1
Have Heard the Term EPC (PC1)
Energy Weighted



A much smaller number of establishments were able to demonstrate an understanding of the characteristics of EPC. On an energy-weighted basis, only 18% of the CA and 20% of the non-CA organizations could identify the defining characteristics of EPC (see Figure 5-2). Not surprising, the larger establishments were much better at accurately defining EPC.

Figure 5-2
Understand Characteristics of EPC (PC2)
Energy Weighted



5.4.2 EPC Offers

The energy-weighted percentage of customers that report they received at least one EPC offer in the last two years was 27% in CA and 22% in non-CA, as shown in Table 5-5. The difference is not statistically significant. Again, strong differences occur between sectors with a high of 42% of Institutional and a low of 11% of Offices (both energy-weighted) reporting they received an offer (CA market, same trend for non-CA).

Table 5-5
Approached by Firms Offering EPC (PC3)
Energy Weighted

Market	Sector						ALL
	Office	Retail	Institutional	Other	High Industrial	Low Industrial	
CA	11%	16%	42%	18%	38%	21%	27%
Non-CA	13%	13%	38%	6%	33%	20%	22%

The percentage of firms that received offers varies over ten-fold by customer size, as shown in Table 5-6. This table uses establishment weights (not energy) and shows that the overall fraction of total establishments receiving offers is quite low (5% in CA) because the bulk of firms are those in the smallest size category.

Table 5-6
Approached by Firms Offering EPC (PC3)
Population Weight

Market	Strata				ALL
	1	2	3	4	
CA	3%	15%	32%	52%	5%
Non-CA	1%	12%	24%	43%	3%

Of those that received offers, the majority, in both the CA and non-CA markets, received at least two offers, with approximately a third of customers who received an offer reporting they received four or more.

5.4.3 EPC Accepted

Among those establishments that received EPC offers, only a small percentage, roughly 13%, resulted in signed agreements. In most cases, offers went no further than an informal “presentation” stage or resulted in a formal bid but no contract award. Institutional customers were most likely to sign final contracts. As shown in Tables 5-7 and 5-8, results were similar in the CA and non-CA areas.

Table 5-7
Involvement Level for EPC (PC4b)
Energy Weighted/California

Response	Sector						ALL
	Office	Retail	Institutional	Other	High Industrial	Low Industrial	
Heard presentation/no proposal	17%	37%	31%	49%	59%	32%	45%
Got proposal/no contract	34%	38%	25%	30%	36%	42%	34%
Tried to negotiate/no agreement	0%	0%	5%	4%	2%	5%	3%
Negotiated and signed contract	17%	15%	26%	17%	2%	16%	13%
Do not know/refused	33%	10%	12%	0%	0%	5%	5%
# Respondents	6	12	41	23	21	19	122

**Table 5-8
Involvement Level for EPC (PC4b)
Energy Weighted/Non-California**

Response	Sector						ALL
	Office	Retail	Institutional	Other	High Industrial	Low Industrial	
Heard presentation/no proposal	33%	40%	29%	57%	52%	47%	45%
Got proposal/no contract	33%	40%	35%	14%	31%	35%	32%
Tried to negotiate/no agreement	0%	10%	6%	15%	6%	6%	6%
Negotiated and signed contract	17%	0%	27%	14%	9%	12%	13%
Do not know/refused	17%	10%	3%	0%	3%	0%	3%
# Respondents	6	10	34	7	18	17	92

The fraction implementing performance contracts over the past two years can be obtained by multiplying the fraction of energy-weighted customers receiving offers by the fraction of those who accepted offers. In the case of California, this fraction equals 3.5% (27% who received offers in the last two years times 13% who accepted offers).

5.4.4 Reasons for Entering and Not Entering a Performance Contract

Customers cited a variety of reasons for not entering into an EPC. Results are tabulated in Table 5-9. The most frequently cited reasons include: preference for performing the work and financing internally, measures not considered cost effective, no available savings opportunities, contractual issues, and doubts about the EPC proposal and/or the firm making the offer. Non-CA firms were about twice as likely to cite preferences for working internally. Contractual issues and doubts about the EPC proposal were more often cited by CA establishments.

**Table 5-9
Main Reasons for EPC Refusal (A_PC5)
Energy Weighted**

Response	CA	Non-CA
Prefer to do work and/or finance internally	15%	28%
Not cost effective	13%	12%
No savings opportunities or already implemented	9%	14%
Contractual issues including control, measurement, and validation	9%	4%
Doubts and distrust around proposal and proposers	9%	3%
Waiting and still investigating	8%	4%
Management policy	5%	11%
Initial cost or lack of funds	5%	0%
Low priority or no interest	5%	4%
Non sequitur/no response	6%	4%
Other	9%	12%
Don't know	7%	3%

5.4.5 ESCO Market Share

Respondents who indicated they had accepted a performance contract in the past year were asked who they selected for their performance contracting project. Little stock should be put in the shares themselves because the sample sizes are very small (since performance contracting is only being implemented by a small fraction of establishments, even with significant over-sampling by size strata). The main point is that no firm dominates the performance contracting industry, either nationally or in the California market. The market is actually characterized by quite a bit of diffusion among service providers. Although there is a trend toward consolidation in the industry, there are also plenty of new entrants who continue to enter the market as well (principally unregulated affiliates of utilities all over the country).

Figure 5-3
Performance Contracting Shares by ESCO
CA (n = 20)

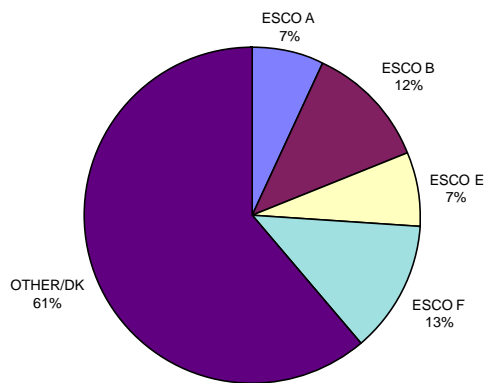
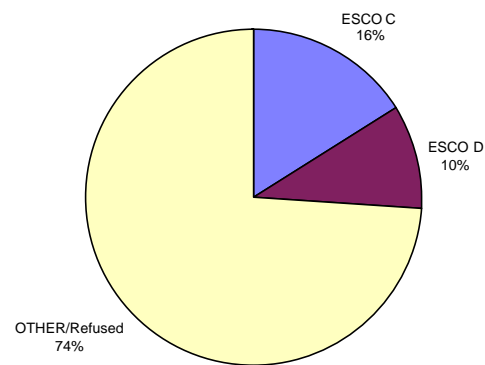


Figure 5-4
Performance Contracting Shares by ESCO
Non-CA (n = 20)



5.4.6 Approach to Estimating the Size of the CA Performance Contracting Market

One of the objectives of this evaluation is to develop approximate estimates of the size of the performance contracting industry in California. There are three principal methods by which such estimates can be made: (1) using self-reported revenue data from EESP interviews, (2) using the results from the customer baseline survey, and (3) using secondary sources or estimates of industry experts. All of these approaches are subject to considerable uncertainty, the smallest of which is probably on the order of at least plus or minus 100 percent. This should not be viewed discouragingly, however. If the size of the industry can be estimated within an order of magnitude, that will in itself be a useful result, particularly with respect to better understanding the relative magnitude of the SPC intervention comparison with the baseline size of the performance contracting market.

The initial hypothesis is that the end-user survey provides the most reliable basis for making such estimates, however, all of these approaches should and will be compared in order to try to triangulate or at least roughly validate the end user-based results. In this section, an initial

approach to estimating the size of the California performance contracting industry is presented. This approach uses the results from the baseline survey in conjunction with several necessary assumptions. An initial estimate of the dollar value of the performance contract market per year in California can be made by using the following input parameters:

- The annual energy usage of nonresidential customers for the three investor-owned utilities (IOUs)
- The fraction of customers implementing performance contracts each year
- The average savings per customer associated with the performance contracts implemented
- The ESCO revenues associated with the savings obtained, which can be estimated based on an assumed price per kWh saved.

Presented in Table 5-10 is a set of initial parameter estimates that have been used to develop a preliminary range of the estimated size of the annual performance contracting industry within the three California IOU territories. The first key estimate needed is the annual nonresidential consumption of the three IOUs. The figure currently being reported by the CPUC in its Direct Access Summary tables for all nonresidential classes except agricultural was utilized. Three principal survey-based parameters are then required: the fraction of energy usage to which performance contracts were offered over the past two years, the fraction that accepted offers by signing contracts, and the estimated annual savings from the performance contracts (self-reported) of those who signed such contracts. Finally, an estimate is required of the front-loaded price at which performance contracts are typically offered on a per-kWh-saved basis. Because this last estimate is subject to considerable uncertainty, the preliminary estimates use a lower and higher range of possible values.

Going through the straightforward calculations using the values shown in the table produces estimates of the annual size of the performance contracting industry between \$50 and \$100 million (recall that these are front-load figures and that, by definition, ESCOs would typically collect these revenues over a multi-year period).

Table 5-10
Estimates of Performance Contracting Industry Size in California

Row	Input	Estimate	Source
A	Total NonRes Energy in kWh	103,601,000,000	Sum of UDC C&I Load from DASR Reports Submitted to the CPUC
B	Fraction Approached	27%	Baseline Survey
C	Signed Deal	13%	Baseline Survey
D	Net Fraction Signed Last 2 Years	3.5%	Row B X Row C
E	Total % Savings per Year	12%	Baseline Survey
F1	Unlevelized (\$) per kWh Saved	\$0.25	Lower range estimate
F2	Unlevelized (\$) per kWh Saved	\$0.50	Higher range estimate
G	Annual kWh Saved	436,367,412	Row A X Row D X Row E
H1	Total Cost for Savings	\$109,091,853	Row F1 X Row G
H2	Total Cost for Savings	\$218,183,706	Row F2 X Row G
I1	Total Cost for Savings/Year	\$54,545,927	Row H1 divided by 2 (years)
I2	Total Cost for Savings/Year	\$109,091,853	Row H2 divided by 2 (years)

Note:

UDC - utility distribution company

5.5 ENERGY PROGRAM PARTICIPATION AND EFFICIENCY-RELATED IMPROVEMENTS

A series of questions was asked about participation in energy-efficiency programs and energy-efficiency-related activities. Specific topics covered included:

- Program participation
- Energy-efficiency actions
- Reasons for taking actions
- Reasons for not taking actions

5.5.1 Program Participation

When weighted by energy use, about one-third of the establishments state that they participated in energy-efficiency programs of some type over the past two years (see Table 5-11). The figures for CA and non-CA are 38% and 32%, respectively. Interestingly, when weighted by number of establishments (Table 5-12), the figures reverse such that 14% of CA and 21% of non-CA establishments report participating in programs over the past two years.

Table 5-11
Participated in Energy Efficiency Programs (IM1)
Energy Weighted

Market	Sector						ALL
	Office	Retail	Institutional	Other	High Industrial	Low Industrial	
CA	22%	24%	60%	28%	47%	34%	38%
Non-CA	33%	17%	37%	23%	30%	47%	32%

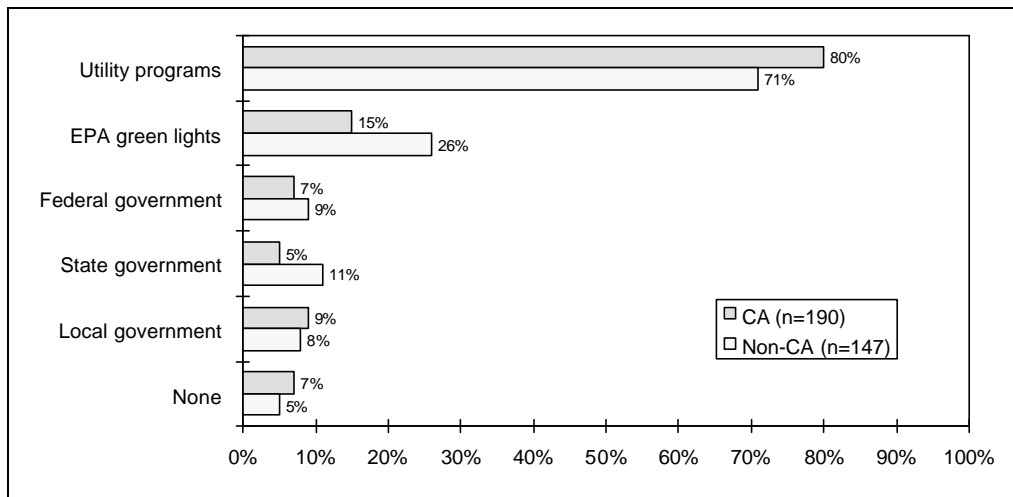
Table 5-12
Participated in Energy Efficiency Programs (IM1)
Population Weight

Market	Strata				ALL
	1	2	3	4	
CA	11%	24%	43%	74%	14%
Non-CA	21%	19%	39%	62%	21%

As shown in Table 5-12, the difference in participation is driven entirely by a higher percentage of participation in the smallest size strata in the non-CA sample (21% for non-CA and 11% for CA). For the larger strata, participation levels are higher in the CA sample. This may indicate that programs in other states have targeted smaller customers to a greater extent than those in CA. It is also possible that the difference is a statistical anomaly (since the sample was designed to provide efficient estimators of energy use, the establishment-based estimates are less reliable, especially with individual strata). Finally, we note that the self-reported participation levels probably over-report actual participation over the past two years. Respondents appear to have a tendency to go back further than “the past two years” when reporting a variety of behaviors.

With respect to the types of programs that underlie general participation, 80% and 71% of the energy-weighted establishments in the respective CA and non-CA samples that said they participated in a program indicated that they participated in a *utility* program (Figure 5-5). A larger percentage of the non-CA market (26% versus 15%) reported they participated in *EPA Green Lights* or *Energy Star* programs. A larger percentage of the non-CA energy-weighted establishments also reported that they participated in *state government* energy programs (11% versus 5%).

Figure 5-5
Types of Energy Efficiency Program Participation (IM1_1)
Energy Weighted



5.5.2 Energy Efficiency Actions

When asked if they had undertaken any specific actions to improve energy efficiency or otherwise reduce energy consumption over the past two years, a large fraction of the energy-weighted establishments indicated that they had: 61% for CA and 66% for non-CA (the difference is not statistically significant), as shown in Table 5-13. When weighted by establishments, the figures are 43% and 47% for the CA and non-CA markets, respectively.

For both CA and non-CA, the Institutional and both Industrial sectors somewhat higher percentages reported taking some kind of action. When viewed by size strata, the differences are more dramatic, ranging in CA from a low of 41% in Stratum 1 to a high of 95% in Stratum 4 (Table 5-14). These percentages may appear high for several reasons. First, the question is binary and does not address the degree or extent of actions taken. Second, as mentioned previously, respondents tend to not follow the “in the last two years” caveat included in questions like this one as closely as researchers would like. Third, respondents may have generous self-definitions of what constitutes actions to improve energy efficiency. Additional questions were asked that attempt to corroborate details on specific energy-efficiency actions that may have been taken.

Table 5-13
Taken Actions to Reduce Energy Use (IM3)
Energy Weighted

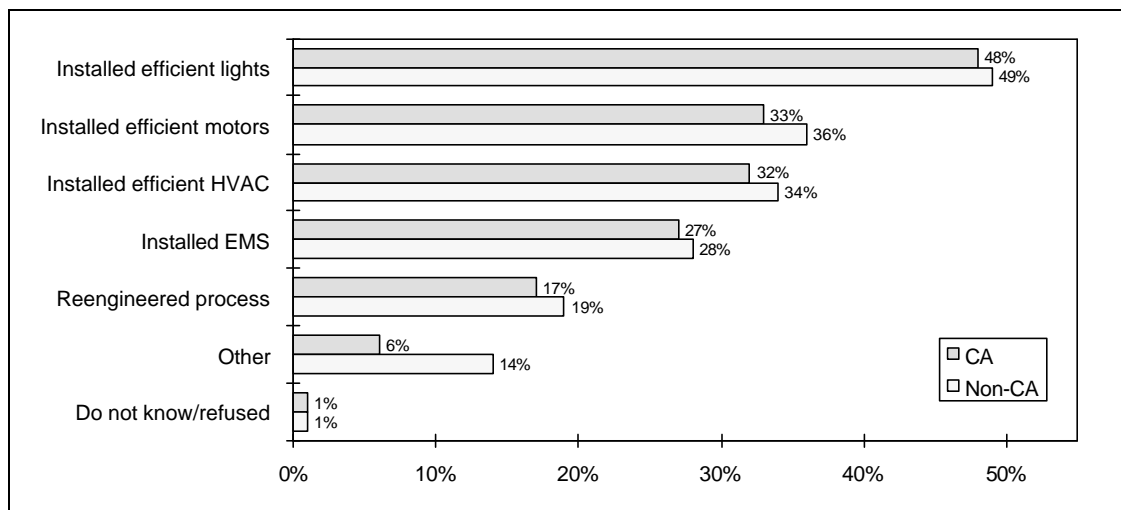
Market	Sector						ALL
	Office	Retail	Institutional	Other	High Industrial	Low Industrial	
CA	50%	51%	73%	56%	68%	58%	61%
Non-CA	58%	44%	74%	54%	73%	74%	66%

Table 5-14
Taken Actions to Reduce Energy Use (IM3)
Energy Weighted

Market	Strata				ALL
	1	2	3	4	
CA	41%	50%	65%	95%	61%
Non-CA	47%	57%	69%	95%	66%

Establishments that reported taking energy efficiency actions were also asked to identify the areas in which these actions were taken. Results are shown in Figure 5-6. On an energy-weighted basis, efficient lighting was installed by about half of the establishments and efficient HVAC and efficient motors were installed by about a third of the establishments. The distribution of actions taken was similar for CA and non-CA markets.

Figure 5-6
Areas Where Energy Efficiency Actions Were Taken (IM4)
Energy Weighted



Customers were also asked about the specific energy efficiency actions that they had undertaken. However, the majority of respondents only cited the general category “efficient equipment” when asked for more detail about the energy efficiency measures they installed. Those respondents that could provide more detail indicated that: T-8s, efficient ballast, and controls were the most popular lighting measures; variable speed drive motors were the most popular motor measure, but mainly for the largest customers; and controls were the most frequently cited HVAC measure outside of the “general equipment” category. Results are tabulated in Table 5-15.

Table 5-15
Specific Energy Efficiency Measures Taken (IM4a_1)
Energy Weighted/California

Response	Strata				ALL
	1	2	3	4	
Lighting Related					
T8 lamps	0%	4%	16%	22%	11%
Efficient ballast	0%	4%	12%	18%	8%
Efficiency equipment	14%	21%	25%	40%	24%
Controls	6%	6%	8%	38%	12%
HIDs	1%	3%	5%	2%	3%
Incandescent to fluorescent	1%	2%	1%	5%	2%
Other	3%	4%	5%	13%	5%
Don't know/not sure	2%	<1%	2%	8%	2%
Motors and VSD Related					
Efficiency Equipment	5%	6%	22%	38%	17%
Variable speed drives	0%	5%	8%	36%	11%
Other	0%	<1%	3%	7%	2%
No answer	1%	4%	7%	4%	5%
HVAC/Refrigeration Related					
Variable speed drives	0%	0%	3%	6%	2%
General equipment	3%	11%	23%	63%	23%
Controls	1%	3%	7%	7%	5%
VAV	0%	0%	2%	10%	2%
Refrigerator/freezer	1%	2%	3%	1%	2%
Furnace	0%	0%	<1%	0%	<1%
No answer/don't know	2%	<1%	5%	2%	3%
Reengineered process	3%	12%	21%	41%	19%
Installed EMS	15%	18%	28%	61%	28%
Other	15%	15%	12%	14%	14%
Do not know/refused	3%	<1%	<1%	0%	1%

5.5.3 Reasons for Taking Energy Efficiency Actions

Table 5-16 presents the reasons why customers have undertaken energy efficiency actions. Clearly, the most important reason was lowering energy costs, with over 80% of the energy-weighted responses listing this factor. Other frequently cited reasons for undertaking actions included enhancing productivity and reducing environmental impacts. Results for the CA and non-CA markets were similar.

Table 5-16
Main Reasons for Taking Energy Efficiency Actions (IM6a)
Energy Weighted

Response	CA	Non-CA
Lower energy costs	82%	81%
Enhance productivity	20%	15%
Reduce environmental impacts	11%	10%
Improve merchandising environment	7%	6%
Take advantage of rebates	4%	4%
Replaced old equipment	2%	6%
Reduce energy consumption	4%	3%
Other	7%	6%
None	<1%	1%
Do not know/refused	1%	<1%
<i># Respondents</i>	308	308

5.5.4 Reasons for Not Taking Energy Efficiency Actions

Respondents were also asked whether, in the last two years, there were any efficiency-related actions that were identified but not undertaken (Table 5-17). On an energy-weighted basis, roughly one-fourth of respondents in both the CA and non-CA markets indicated that there were such actions that had not been undertaken. The sectors with the highest percentages of identified but unimplemented actions were Institutional and High Industrial (31% and 38% in the CA market, respectively; non-CA figures are similar). When viewed by customer size, the differences were even more pronounced, ranging from a low of 4% in Stratum 1 to a high of 64% in Stratum 4 in the CA market.

Table 5-17
Energy Efficiency Actions Identified But Not Taken (IM8)
Energy Weighted

Market	Strata				ALL
	1	2	3	4	
CA	4%	23%	21%	64%	26%
Non-CA	16%	17%	29%	56%	27%

Those respondents who reported they had identified opportunities for savings that had not been acted upon were asked to describe the most important reasons for the lack of action (see Table 5-18). The primary reason, in both the CA and non-CA markets, was described as “other priorities for capital spending.” Other key reasons cited were that the savings did not justify the added investment costs, and that there was a lack of funds available for investment. Still other reasons cited, though by fewer respondents, were uncertainty of energy savings, inadequate information with respect to convincing management, and a lack of management time to oversee project development.

Table 5-18
Reasons for Not Implementing Energy Efficiency Ideas (IM8a)
Energy Weighted

Response	CA	Non-CA
Other priorities for capital spending	30%	32%
No funds available for investment	29%	21%
Amount of savings did not justify added investment costs	18%	33%
Energy savings were too uncertain	11%	4%
Needed more information to make decision or convince management	8%	5%
Not enough management time to oversee project	7%	6%
Could not obtain financing	4%	3%
Other	24%	9%
None	2%	2%
Do not know/refused	6%	1%
<i># Respondents</i>	119	115

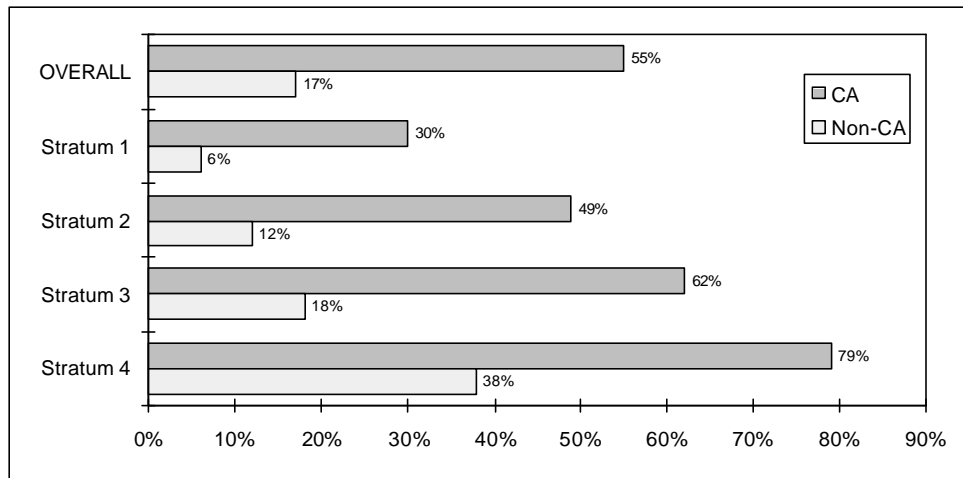
5.6 ELECTRIC SUPPLY CHOICES AND RELATIVE ROLE OF ENERGY EFFICIENCY

Questions were asked of respondents on topics related to their choices of electric commodity suppliers. In addition, respondents were asked about the role, if any, of energy efficiency in their supply-related decision-making processes.

To begin with, the CA sample was asked whether or not they were aware that they had a choice of electricity suppliers. Overall awareness levels varied from 85% for Stratum 1 to 100% for Stratum 4, with an energy-weighted average of 93%.

Both CA and non-CA respondents were asked whether they had received any offers to purchase electricity from any suppliers other than their local distribution utility (see Figure 5-7). For the CA sample, 55% of the energy-weighted respondents indicated they had received offers (ranging from 30% in Stratum 1 to 79% in Stratum 4). For the non-CA sample, 17% indicated they had received offers (ranging from 6% in Stratum 1 to 38% in Stratum 4). The difference in the percentages that had received offers in CA by market sector were minimal, ranging from a low of 43% for Retail to a high of 62% for High Industrial.

Figure 5-7
Received Offers from Other Electricity Suppliers (ES4a)
Energy Weighted



Respondents were then asked the status of their decision to switch to alternative electric suppliers (Table 5-19). The percentage of establishments that report they switched varied from 1% for Stratum 1 to 31% for Stratum 4. The overall percentage of establishments estimated to have switched is 2%, while the percentage on an energy-weighted basis that has chosen a new supplier is estimated at 10%. For non-choosers, most customers reported they were still “waiting to see how the market unfolds,” “had not evaluated the situation yet,” or “had no intent” to choose.

Table 5-19
Activities Pursued with Respect to Deregulation (ES4c)
California

Response	Population Weight	Energy Weight
Selected new supplier	2%	10%
Actively shopping	2%	5%
Waiting to see market unfold	27%	37%
No intent to switch	20%	16%
Not evaluated situation yet	43%	29%
Do not know/refused	6%	3%

5.6.1 Choosers

Strata-level results on supplier switching follow the switching results reported by the CPUC for the nonresidential population fairly closely. The percent of nonresidential customers and load that chose unregulated suppliers in 1998 is shown in Table 5-20. The survey-based results somewhat underestimate the percent of load that switched for the largest customer segment. This result appears to be because no switchers were obtained in the sample of the Stratum 4 High Industrial segment. This group had a census population of 22, from which a sample of 7 was completed.

Unfortunately, all of those in the sample of seven (7) reported that they have not switched. Because this group carries a large energy weight, the overall estimate of the percent of energy that switched (10%) is biased downward.

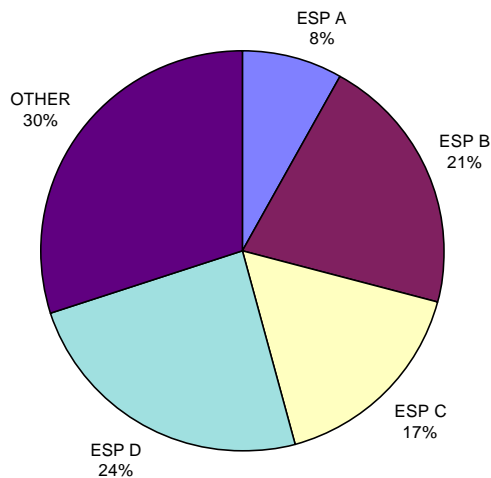
Table 5-20
UDC Customers Buying Electric Supplies from Third Parties

Direct Access Load and Customers as of: December 31, 1998							
Activities	Residential	Commercial <20 kW	Commercial 20 - 500 kW	Industrial > 500 kW	Agricultural	Unknown	Total
Total Direct Access Customers	78,881	23,631	9,338	882	2,584	17	115,333
Total UDC Customers	8,742,280	980,273	197,669	4,865	119,996	0	10,045,083
Percent Direct Access Customers	0.9%	2.4%	4.7%	18.1%	2.2%	0.0%	1.1%
Total Direct Access Load (Annual MWH)	599,923	448,374	6,174,004	11,457,061	347,648	55	19,027,065
Total UDC Load (Annual MWH)	54,640,972	13,556,067	48,256,366	41,789,369	5,471,500	0	163,714,274
Percent Direct Access Load	1.1%	3.3%	12.8%	27.4%	6.4%	0.0%	11.6%

Source: CPUC. These data are updated monthly by the utility distribution companies (UDCs) and reported to the CPUC. The CPUC prepares totals for the state and posts them on their website at www.cpuc.ca.gov/divisions/energy/Direct_Access/DASR.htm.

Those customers who reported switching to a new supplier (including the unregulated affiliate of their UDC) were asked to identify whom they had switched to. The estimated anonymous ESP shares are shown in Figure 5-8 on an energy-weighted basis. As noted above, the switching rates for the largest stratum, Stratum 4, are underestimated, and thus the results presented in Figure 5-8 should be considered rough estimates and are probably most accurate for the middle of the nonresidential market (establishments ranging in size from roughly 100kW to 1,000kW). The purpose of the chart is simply to provide a very approximate description of the number of major players and their relative market shares.

Figure 5-8
Relative ESP Electric Supply Shares (ES5b)
Energy Weighted/California (n = 63)



Customers who switched electricity providers were then asked whether they based their decision solely on the basis of price, or whether they considered some other factors in addition to price. Those that said they considered factors in addition to price were then queried on which were the most important non-price factors. The results, shown in Table 5-21, indicate that most customers considered other factors in addition to price in their decision on to whom to switch. By itself, this might seem to indicate that customers are seeking value-added services, however, this conclusion is not supported by the follow-up responses (shown in Table 5-22) which indicate that the most cited “additional” factors are *guaranteed [price-based] savings* and the *reputation of the provider*. In particular, energy-efficiency or energy management services are cited as an important reason for choosing a supplier by only 6% of the energy-weighted respondents.

Table 5-21
Basis for Switching Decision (ES11)
Energy Weighted/California

Basis for Switching Decision	Percent
Price only	16%
Considered other factors in addition to price	79%
Don't know/refused	5%

Table 5-22
Most Important Other Factors Considered in Selecting a Supplier (ES12)
Energy Weighted/California

Response	ALL
Consolidated or other billing services	20%
EE and/or energy management services	6%
Metering or power quality services	16%
Easy to understand	15%
Guaranteed savings	44%
Good past experience	4%
Good reputation	37%
Responsiveness of company	21%
Other	35%
Don't know/refused	5%
<i># Respondents</i>	<i>53</i>

The picture, however, is further complicated with respect to the importance of efficiency-related services based on responses to two additional follow-up questions that probed on whether customers that switched had received offers that included efficiency services as part of the package and on whether such services were important. In the first case, about half of the customers (energy-weighted) indicated that they had, in fact, received offers that included such services (Table 5-23).

Table 5-23
Were Offered Energy Efficiency Services in Energy Supply Packages (ES13a)
Energy Weighted/California

Response	Strata				ALL
	1	2	3	4	
Yes	0%	41%	41%	79%	51%
No	100%	59%	54%	13%	44%
Don't know/refused	0%	0%	5%	8%	5%
<i># Respondents</i>	<i>1</i>	<i>11</i>	<i>28</i>	<i>19</i>	<i>59</i>

When all of the customers who switched were asked how important they thought it was that offers from electricity suppliers include energy-efficiency services, 35% said very important and 28% said somewhat important (both percentages are energy-weighted results and are presented by survey stratum in Table 5-24).

Table 5-24
Importance of Energy Efficiency Offers in Supply Package (ES13b)
Energy Weighted/California

Response	Strata				ALL
	1	2	3	4	
Very important	100%	40%	34%	32%	35%
Somewhat important	0%	41%	31%	16%	28%
Somewhat unimportant	0%	9%	22%	19%	18%
Very unimportant	0%	10%	14%	25%	16%
Do not know/refused	0%	0%	0%	7%	2%
# Respondents	1	11	31	20	63

The combination of results obtained from this series of questions on switching, although seemingly contradictory, may indicate that customers currently *expect* electricity providers to be knowledgeable and able to provide energy-efficiency services, but that this is not a differentiating factor in their final decision-making processes. Clearly, there is also a significant segment of customers that do not consider it important at all. Anecdotal evidence suggests that this segment of customers prefers to completely separate their electricity supply purchases from other activities on the customer's own side of the electric meter.

5.6.2 Non-Choosers

Those customers who did not choose an unregulated supplier of electric supply were asked a separate but similar set of questions. First, respondents were asked if they received offers that included energy efficiency; then they were asked if the inclusion of energy efficiency was an important aspect of electricity suppliers' offers. Results are tabulated in Tables 5-25 and 5-26.

Twenty-two percent of the energy-weighted respondents indicated they had received offers with energy efficiency services; 39% and 34% said that such services were *very* or *somewhat* important, respectively. Based on the previous discussion of the differences between stated importance of efficiency and the role it is cited to actually play in the final decision-making process, the results for non-choosers should be viewed cautiously. Stated importance should not be misconstrued as willingness to pay, especially in a market where many customers are accustomed to receiving efficiency-related services either free or with financial incentives. For those who indicated efficiency was an important component of offers, the most cited reasons were "saving money" and obtaining "technical knowledge and expertise."

Table 5-25
Were Offered Energy Efficiency Services in Energy Supply Packages (ES8)
Energy Weighted/California

Response	Strata				ALL
	1	2	3	4	
Yes	8%	12%	24%	55%	22%
No	82%	79%	68%	39%	70%
Don't know/refused	9%	9%	8%	5%	8%
# Respondents	80	174	150	48	452

Table 5-26
Importance of Energy Efficiency Offers in Supply Package (ES9a)
Energy Weighted/California

Response	Strata				ALL
	1	2	3	4	
Very important	38%	40%	45%	22%	39%
Somewhat important	26%	35%	38%	29%	34%
Somewhat unimportant	19%	15%	12%	19%	15%
Very unimportant	9%	8%	4%	26%	10%
Do not know/refused	7%	2%	1%	3%	3%
# Respondents	80	174	150	48	452

5.7 ENERGY-RELATED DECISION MAKING

Respondents were asked a series of questions focused on their organization's decision making on energy-efficiency related projects, including:

- Who has ultimate authority over energy efficiency related projects?
- Difficulty in convincing decision maker(s) to approve energy efficiency related projects?
- Has organization assigned responsibility for controlling energy usage and costs?
- Budget set up for energy efficiency related projects?
- Company policies for the selection and use of energy efficient equipment?
- Long-term investment criteria employed for energy equipment selection?

5.7.1 Authority for Energy Efficiency Projects

Respondents were asked to best characterize who has ultimate authority in deciding to proceed with energy efficiency projects. First, firms were categorized into individual versus group decision-making authority. Table 5-27 presents results separately for single-site establishments and for multiple-site establishments. For the single-site establishments, CA market customers were more likely than non-CA customers to have an individual decision-maker. This difference

was present in all but one size strata. For both markets, smaller establishments were much more likely to have an individual decision-maker.

Table 5-27
Individual Authority for Energy Efficiency Projects (vs. Group Authority)
Energy Weighted

Market	Strata				ALL	# Respondents
	1	2	3	4		
Single-Site Establishments (DM1_1)						
CA	79%	60%	39%	17%	63%	195
Non-CA	71%	60%	27%	6%	54%	176
Multiple-Site Establishments (DM1_2)						
CA	59%	38%	23%	14%	26%	320
Non-CA	37%	34%	17%	27%	25%	321

For multiple-site establishments, about one-fourth of the energy-weighted respondents indicated there was individual authority of deciding on energy efficiency projects. However, more of the smaller CA establishments (Stratum 1 through 3) reported a single decision-maker while more of the larger non-CA establishments (Stratum 4) reported a single decision-maker. As could be expected, single-site establishments were much more likely to have an individual in charge of approving energy efficiency projects.

Table 5-28 presents further detail on the decision-making structure for multiple-site establishments. About 17% of the establishments report that energy efficiency projects are authorized by a group located at the parent organization. About 28% of the establishments utilize group authority that includes members only from the affected facility, and another 28% utilize group authority that includes members from the affected facility and the parent organization. CA and non-CA splits are similar.

Table 5-28
Facility Authority for Energy Efficiency Projects
Multiple-Site Establishments (DM1_2)
Energy Weighted

Response	CA	Non-CA
One individual at this facility	26%	25%
A group at this facility	28%	26%
A group at parent organization	17%	17%
A group - this and parent	28%	30%
Do not know/refused	1%	2%
# Respondents	320	321

5.7.2 Getting Approval for Energy Efficiency Projects

As shown in Figure 5-9, a majority of respondents indicated that it was either very easy or somewhat easy to get approval for energy efficiency investments. Both CA and non-CA markets showed similar results. Some key reasons cited for difficulties in gaining approval include savings not justifying the investment costs, other spending priorities, no funds available for the investment, lack of information upon which do base a decision, and uncertainty in energy savings (see Table 5-29).

Figure 5-9
Ease in Getting Approval for Energy Efficiency Investments (DM4)
Energy Weighted

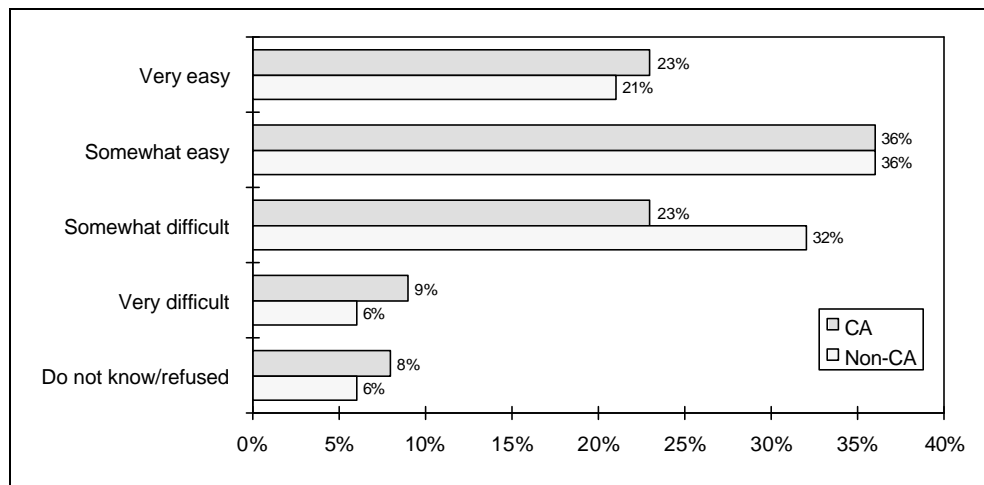


Table 5-29
Reasons for Difficulties in Gaining Energy Efficiency Investment Approval (DM4a)
Energy Weighted

Response	CA	Non-CA
Savings do not justify costs	30%	30%
Other priorities for spending	18%	32%
No funds available	19%	12%
Need more information for decision	15%	14%
Energy savings are uncertain	10%	9%
Too much time for convincing analysis	9%	7%
Cannot obtain financing	2%	3%
Short on management time/staff	3%	6%
Other	10%	11%
None	1%	0%
Do not know/refused	3%	1%
<i># Respondents</i>	140	153

5.7.3 Assigned Responsibility for Controlling Energy Costs

No significant difference was found between the CA and non-CA samples with respect to whether or not responsibility for controlling energy costs had been assigned to an individual, group, or outside contractor (Tables 5-30 and 5-31). For CA, the differences in responses by size strata were most pronounced, with a high of roughly 68% of those in Stratum 1 reporting no one was assigned the role of managing energy costs and a low of about 7% in Stratum 4 saying no one had such a role (non-CA results were very similar). Among sectors, Institutional customers were most likely to have assigned an energy management role.

Table 5-30
Assigned Responsibility for Controlling Energy Costs (DM6)
Energy Weighted

Response	CA	Non-CA
Yes, In-house staff person	40%	40%
Yes, A group of staff	15%	11%
Yes, An outside contractor	2%	2%
No	41%	46%
Do not know/refused	2%	1%

Table 5-31
No Assigned Responsibility for Controlling Energy Costs (DM6)
Energy Weighted

Market	Strata				ALL
	1	2	3	4	
CA	68%	51%	35%	7%	41%
Non-CA	71%	58%	41%	9%	46%

5.7.4 Budgeting for Energy Efficiency Projects

When asked whether there was a budget set aside for energy-efficiency related improvements or whether such improvements had to be funded from other budgets, less than 20% of energy-weighted respondents indicated that they maintained separate budgets (Table 5-32). There was virtually no difference between the CA and non-CA groups. The strata-level results vary for the CA sample, from a low of 5% for Stratum 1 to a high of 28% for Stratum 4. By sector, for CA, only Institutional at 32% and Office at 28% are noticeably above the overall mean of 18%. Note that the non-CA Institutional and Office percentages are 19% and 25%, respectively.

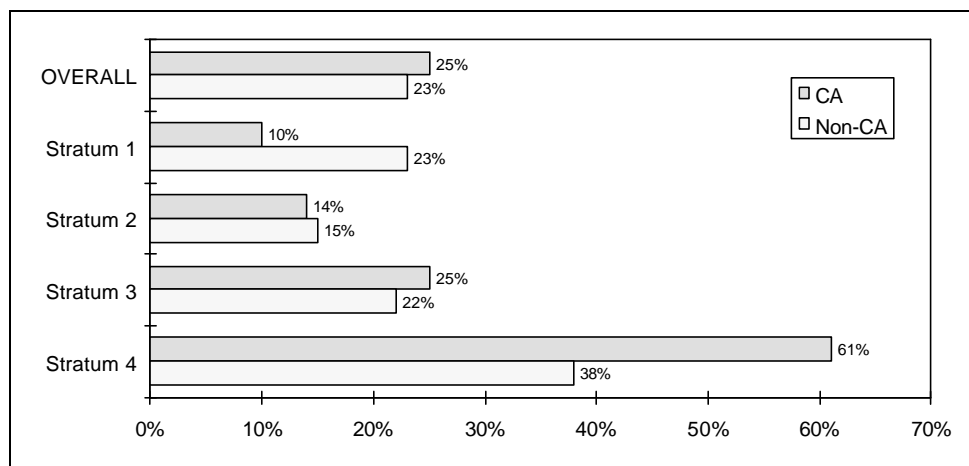
Table 5-32
Separate Budget for Energy Efficiency Projects (DM8)
Energy Weighted

Response	CA	Non-CA
Have annual budget for EE improvements	18%	17%
Money must come from other budgets	70%	72%
Don't know/Refused	12%	10%

5.7.5 Organization's Energy Efficiency Policies

Respondents were also asked whether or not their organizations had developed a policy for the selection of energy-efficient equipment. As shown in Figure 5-10, about one-fourth of the energy-weighted respondents indicated that their organizations did have such a policy. The presence of a policy for selecting energy-efficient equipment varies greatly by customer size, as shown in the figure for both CA and non-CA markets. Interestingly, the percentage with such a policy is much higher in CA for Stratum 4 but lower for Stratum 1. For the CA market, Institutional and High Industrial customers were most likely to have such a policy.

Figure 5-10
Have Policy for Selecting Energy Efficient Equipment (DM9)
Energy Weighted



For those with energy efficiency policies, Table 5-33 shows the energy-weighted percent of establishments that have specific equipment requirements included in their policy. As shown, CA establishments were generally more likely to have policies that required the use of specific equipment. For lighting and HVAC equipment the difference between CA and non-CA was statistically significant.

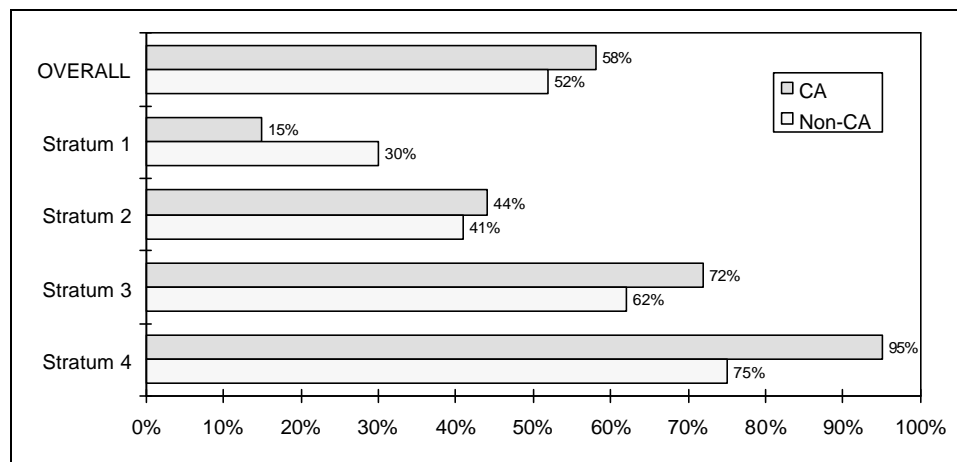
Table 5-33
Types of Energy Efficient Equipment Required by Policy (DM10)
Energy Weighted

Equipment Type	CA	Non-CA
Electronic Ballast or T8 Lamps	80%	65%
Lighting Controls	76%	52%
HVAC	76%	61%
High-Efficiency Motors	80%	74%
Variable-Speed Motor Controls	76%	74%
Energy Management Control Systems	64%	70%

5.7.6 Investment Criteria for Energy Efficiency Projects

When asked whether or not their organization applies investment analysis to energy equipment selection, 58% and 52% of the energy-weighted respondents in CA and non-CA, respectively, stated that they do use such analyses (Figure 5-11). The difference is not statistically significant. The percentage of energy represented by customers with policies to select efficient equipment varies significantly with customer size and is higher for the CA market for Stratum 4 but lower for Stratum 1. For the CA market, Institutional and High Industrial are more likely than average to use such analyses (73% and 71%, respectively), while Retail is much less likely (34%).

Figure 5-11
Long-Term Investment Analysis Applied to Energy Efficiency Investments (DM11)
Energy Weighted



For those stating they use investment analysis in the CA market, payback period was the most widely cited (by about 2/3 of energy-weighted respondents), followed by internal rate of return and life-cycle cost. For those who stated payback was the primary criteria, the mean required payback period (energy-weighted) was 3.4 years for CA and 4.0 years for non-CA. As expected, Institutional customers reported the highest mean payback periods (5.9 and 5.4 years for CA and non-CA institutional, respectively).

5.8 AWARENESS AND ASSESSMENT OF SPECIFIC TYPES OF ENERGY SERVICE PROVIDERS AND SERVICE OFFERS

We asked a variety of questions concerning energy service providers (ESPs) and service offers to both the CA and non-CA interviewees. The sequence of questions covered the following:

- Has the organization been approached by companies offering energy efficiency services?
- Types of efficiency services offered?
- Respondents' knowledge of companies that provide energy efficiency services?
- Credibility rankings of energy-efficiency information providing companies?
- Type of energy efficiency service or information providing companies that would be called on first for help?
- Contractors for regular O&M of HVAC systems, lighting systems, and other major energy-using equipment?
- Types of advice provided by contractors?

5.8.1 Energy Efficiency Services Offers

Respondents were asked whether or not they had been approached in the past two years by any companies offering to provide services to improve energy efficiency (Figure 5-12). These results are shown in the figure on an energy-weighted basis by strata for both markets. The difference between the 44% and 35% reported for the CA and non-CA markets, respectively, is statistically significant. As expected the results range widely by size strata. There is much less variation by market sector with the high and low percentages being 53% for Institutional and 36% for Retail for the CA market.

Figure 5-12
Offered Energy Efficiency Services by Other Firms in Past 2 Years (EO1)
Energy Weighted

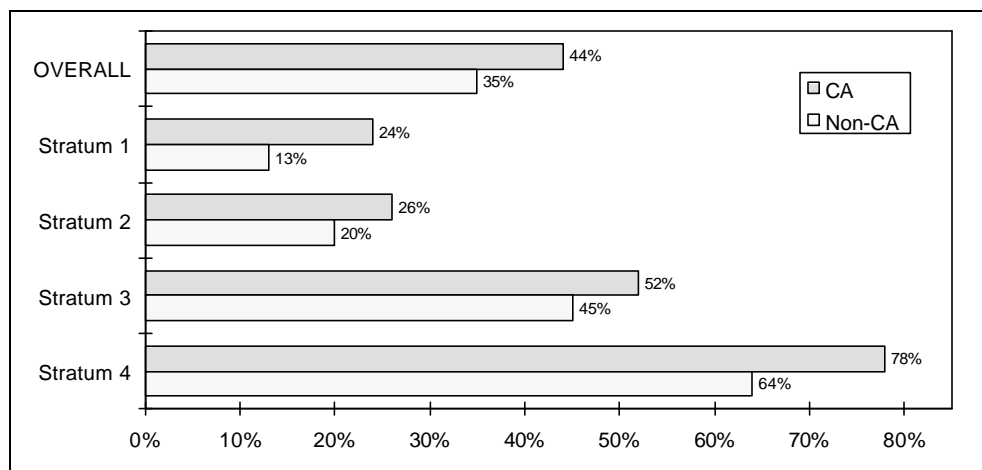


Table 5-34 shows the type of energy efficiency services that were offered to surveyed establishments. The non-CA establishments were more likely to have been offered consulting and audit-related services than the CA establishments. In addition to consulting services, general energy efficiency services covering multiple end uses were offered to the majority of organizations. About twice as many CA establishments provided a “don’t know” response to this question.

Table 5-34
Types of Energy Efficiency Services that Were Offered (EO2)
Energy Weighted

Response	CA	Non-CA
Consulting/audit related	18%	34%
End use - multiple	14%	21%
General savings	25%	18%
HVAC	3%	1%
Lighting	12%	9%
Motors	3%	0%
Don't know/no answer	21%	11%
Other	3%	7%
<i># Respondents</i>	205	149

5.8.2 Knowledge and Credibility of Companies Providing Energy Efficiency Services

In order to gauge customer awareness of energy service providers, respondents were asked to provide names of all companies they knew that specialized in providing energy efficiency services, performance contracting, and the provision of electricity. Cited companies were tabulated and the results are presented in Table 5-35. While over 50% of the respondents (on an energy-weighted basis) did not name any energy service providers, the most frequently cited service providers were the firms’ current electric utilities. The names of ESCOs were the least frequently cited. Energy service providers were more frequently cited by CA customers as compared to non-CA customers. This is most likely the result of the more advanced state of deregulation in CA versus many parts of the U.S. Product vendors and contractors were more likely to be mentioned by non-CA customers. In general, the smaller establishments were more likely to reference their current utility, while larger establishments referenced other types of companies.

Table 5-35
Customer Awareness of Firms Offering Energy Efficiency, Energy Performance Contracting, or Electricity Supply (SP1)
Energy Weighted

Response	Strata				ALL
	1	2	3	4	
California					
Current utility	40%	35%	24%	9%	28%
ESCO	1%	4%	7%	22%	7%
ESP	6%	11%	17%	49%	18%
Product vendor or contractor	3%	5%	10%	16%	8%
Don't know/no response	56%	52%	54%	39%	51%
Non-California					
Current utility	33%	27%	23%	12%	24%
ESCO	1%	6%	7%	12%	7%
ESP	5%	6%	5%	36%	11%
Product vendor or contractor	6%	11%	13%	46%	17%
Don't know/no response	57%	58%	63%	32%	55%

When asked to rate, on a scale of 0 to 10, how credible they perceived different types of companies were with respect to energy-efficiency related information, electric utilities scored highest in both markets (Table 5-36). Electric utility scores were higher in the CA market, while ESCOs were lower in CA.

Table 5-36
Mean Credibility Ratings¹ (SP4A)

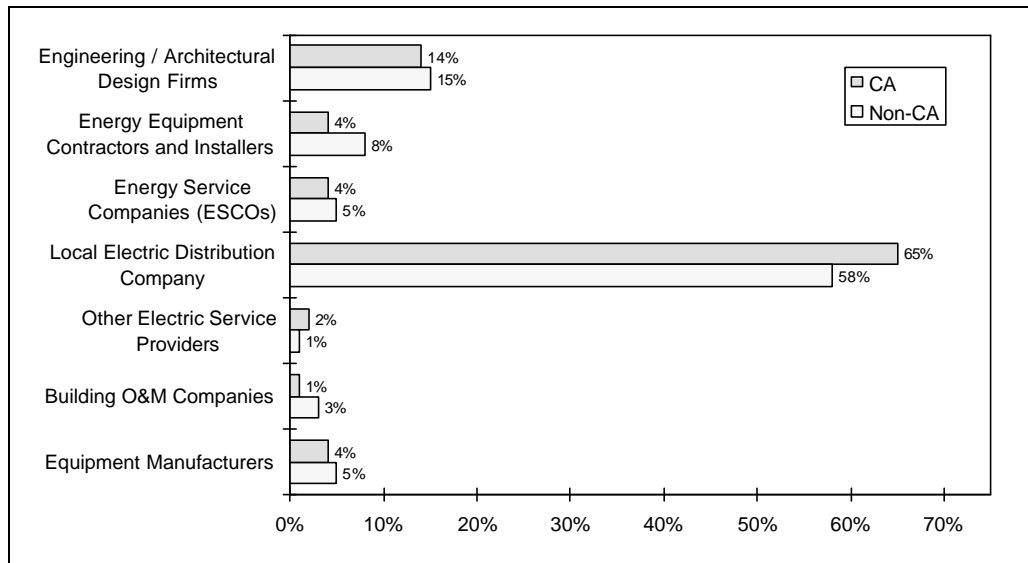
Type of Firm	Energy-Weighted Mean	
	CA	Non-CA
Engineering / Architectural Design Firms	6.6	6.5
Energy Service Companies (ESCOs)	5.6	6.0
Your electric distribution company	7.4	7.0
Building operations and maintenance (O&M) companies	5.5	5.8
Equipment manufacturers	6.2	6.2
Energy Equipment Contractors and Installers (e.g., lighting, HVAC)	5.7	6.2
Companies, besides your electric distribution company, that provide electricity supply	5.6	6.1

¹Ratings use a 0 to 10 Scale (0, "not at all credible" to 10, "extremely credible").

When asked who they would typically call first for efficiency-related information or help, respondents overwhelmingly selected their electric utilities (65% in CA and 58% in non-CA), as shown in Figure 5-13. Engineering and Architectural Design firms were the next most frequently

cited at around 15%. ESCOs were cited by only approximately 5% of energy-weighted respondents.

Figure 5-13
Firms Typically Called First for Energy Efficiency Assistance (SP4b)
Energy Weighted



5.8.3 Operations and Maintenance Contractors

Table 5-37 shows the percent of establishments (on an energy-weighted basis) that regularly use HVAC and lighting O&M contractors. Overall, just under 40% of the establishments utilize HVAC O&M contractors, while about 15% utilize lighting O&M contractors. While differences in the CA and non-CA markets are not much different in aggregate, the large non-CA establishments are much less likely to utilize O&M contractors.

Table 5-37
Use of and Advice from Operations and Maintenance Contractors
Energy Weighted

	Market	Strata				ALL	# Resp
		1	2	3	4		
Utilize HVAC O/M contractor (SP6a)	CA	19%	39%	44%	52%	39%	515
	Non-CA	23%	37%	46%	20%	35%	499
HVAC contractor provides Energy Efficiency recommendations (SP6b)	CA	32%	23%	20%	23%	23%	191
	Non-CA	12%	26%	29%	54%	28%	185
Utilize Lighting O/M contractor (SP7a)	CA	9%	14%	15%	30%	16%	515
	Non-CA	14%	18%	15%	6%	14%	499
Lighting contractor provides Energy Efficiency recommendations (SP7b)	CA	44%	49%	35%	38%	41%	81
	Non-CA	59%	27%	56%	100%	48%	73

For establishments that use O&M contractors, Table 5-37 also shows the fraction that receive energy efficiency advice from these contractors. On average, about one-fourth of the establishments who use HVAC O&M contractors get energy efficiency recommendations from the contractors. This fraction increases to the 40% to 50% range for establishments that use lighting O&M contractors.

5.9 SELF-REPORTED EFFICIENCY-RELATED KNOWLEDGE AND BARRIERS

Respondents were asked to rate their organization’s level of knowledge with respect to energy-savings opportunities in lighting, HVAC, and all other end uses (Table 5-38). The ratings were requested on a 0 to 10 scale, with “0” being completely uninformed and “10” being extremely well informed. As shown in Table 5-38, on an overall basis, there are few differences between markets and only a slight difference between lighting, HVAC, and other, with lighting being the end use that respondents scored themselves most knowledgeable about. Not unexpectedly, the differences by strata are more striking with knowledge levels increasing significantly by size strata. In addition, the trend discussed previously—in which the small non-CA customers appear more knowledgeable than their CA peers about efficiency-related matters but the reverse is true in the large customer group—continues with these results. The self-reported knowledge results did not vary greatly by market sector, although Institutional and High Industrial once again showed slightly higher scores than average.

Table 5-38
Mean Energy Efficiency Knowledge Ratings¹

Self-Reported Knowledge of	Market	Strata				All
		1	2	3	4	
Lighting opportunities (KN2a)	CA	4.2	5.2	6.0	8.5	5.9
	Non-CA	5.0	5.0	5.5	7.2	5.5
HVAC opportunities (KN2b)	CA	3.3	4.4	5.7	8.3	5.4
	Non-CA	4.5	5.1	5.6	7.3	5.6
Other opportunities (KN2c)	CA	3.6	4.9	5.8	7.8	5.5
	Non-CA	5.2	5.0	5.4	6.5	5.4

¹Ratings use a 0 to 10 Scale (0, “completely uninformed” to 10, “extremely well informed”).

Interviewees also were asked to estimate the maximum percentage by which they thought their facility’s total annual electricity consumption could be reduced by implementing all cost-effective energy-efficiency opportunities. The energy-weighted mean percentages were 16% for the CA market and 17% for the non-CA market. No clear pattern of variation was found in the strata level results and only minor differences by market sector.

Respondents were then asked to rate the significance of a number of possible obstacles to their organization’s investment in cost-effective, energy-efficiency opportunities. The ratings were again requested on a 0 to 10 scale with “0” being a completely insignificant obstacle and “10” being extremely significant. The overall results are shown in Table 5-39. No major systematic differences appear between the CA and non-CA markets. Between potential barriers, uncertainty over estimated savings, uncertainty over information provided by proposing firms, the time and

cost associated with firm selection and contracting, and the time it takes to become adequately informed are the highest rated barriers.

Table 5-39
Barriers to Implementing Energy Efficiency, Mean Ratings¹

Self-Reported Significance of Barriers	CA	Non-CA
Uncertainty over whether actual savings will be equal to or greater than estimated savings (BR1a)	6.2	6.3
Amount of time it takes to acquire enough information to make an informed decision to invest in an energy-efficiency project (BR1b)	5.6	5.8
Time and cost associated with selecting contractors and negotiating project terms (BR1c)	5.8	6.1
Uncertainty over <i>information provided</i> by firms proposing efficiency-related projects (BR1d)	6.2	6.0
Disagreements between decision makers within your organization over the relative importance of energy-efficiency related investments compared with other capital projects (BR1e)	4.2	4.8
Lack of access to financing for energy-efficiency related projects (BR1f)	4.9	4.9
Lack of use of formal financial analyses to evaluate energy equipment purchase decisions (BR1g)	4.5	4.8
Lack of availability of energy-efficient products and services (BR1h)	4.3	4.7

¹Ratings use a 0 to 10 Scale (0, "completely insignificant" to 10, "extremely significant").

5.10 AWARENESS OF CALIFORNIA'S PROGRAM RESTRUCTURING AND NSPC PROGRAM

At the time the surveys were completed, an administrative transition was planned for 1999. CA respondents were asked whether they were aware that administration of efficiency programs was changing and whether they could describe the way in which the change would occur. Lastly, CA respondents were asked whether or not they were aware of the 1998 NSPC Program. Results are shown in Tables 5-40 through 5-42 on an energy-weighted basis. Key points are that most customers did not know a change was taking place, those that did know something was changing were generally unable characterize what the change was, and only 16% of customers were aware of the 1998 NSPC Program. As highlighted in Figure 5-14, SPC awareness varied by size from a low of 6% for Stratum 1 to a high of 40% for Stratum 4.

Table 5-40
Aware of Changes in Administration of Energy Efficiency Services(RS1a)
Energy Weighted/California

Response	Sector						ALL
	Office	Retail	Institutional	Other	High Industrial	Low Industrial	
Yes	49%	40%	57%	41%	51%	33%	45%
No	51%	60%	39%	56%	47%	67%	54%
Don't know/refused	0%	0%	4%	3%	2%	0%	1%
<i># Respondents</i>	56	67	93	119	91	89	515

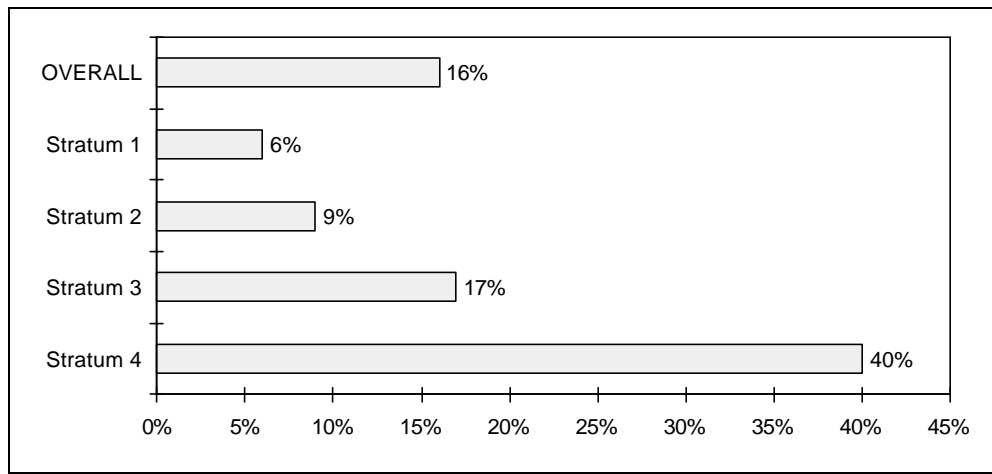
Table 5-41
Respondent Understanding of How Programs are Changing (RS1b)
Energy Weighted/California

Response	Sector						ALL
	Office	Retail	Institutional	Other	High Industrial	Low Industrial	
Utilities will no longer administer programs	11%	0%	12%	10%	12%	10%	10%
A statewide entity will administer programs	4%	7%	6%	15%	12%	11%	10%
Other	44%	57%	28%	29%	37%	35%	37%
Don't know/refused	42%	36%	54%	46%	38%	44%	43%
<i># Respondents</i>	27	27	56	50	39	29	228

Table 5-42
Aware of New SPC Program (RS2)
Energy Weighted/California

Response	Sector						ALL
	Office	Retail	Institutional	Other	High Industrial	Low Industrial	
Yes	11%	8%	30%	14%	19%	14%	16%
No	89%	90%	70%	86%	77%	85%	82%
Don't know/refused	0%	2%	0%	1%	5%	1%	2%
<i># Respondents</i>	56	67	93	119	91	89	515

Figure 5-14
Aware of New SPC Program (RS2)
Energy Weighted/California



5.11 SMALL ESTABLISHMENT ENERGY EFFICIENCY

As noted above in several instances, the smaller CA establishments appeared less likely to have participated in energy efficiency activities than the smaller non-CA establishments while the larger CA establishments were more likely to have participated in energy efficiency as compared to larger non-CA establishments. Areas where this difference was noted include the following:

- Participation in energy efficiency programs (Section 5.4, Table 5-12);
- Taken actions to reduce energy consumption (Section 5.4, Table 5-14);
- Establishment of an energy efficiency policy (Section 5.6, Figure 5-10); and
- Application of long-term investment analysis to energy equipment selection (Section 5.6, Figure 5-11).

These results may provide some indication that programs in other states have targeted smaller customers to a greater extent than those in CA. It is also possible that the difference is a statistical anomaly (since the sample was designed to provide efficient estimators of energy use, the establishment-based estimates are less reliable, especially with individual strata).

These differences were examined using frequency tables, chi square, and logistic regression. Before constructing the frequency tables, we first divided the non-CA market into two submarkets: (1) those with relatively low levels of energy efficiency activities, and (2) those with relatively high levels of energy efficiency activities. Results for some key energy efficiency activities were then compared for the various markets. Results are shown in Table 5-43.

Table 5-43
Energy Efficiency Activity Summary
Energy Weighted

	Market	Strata			
		1	2	3	4
Participated in Energy Efficiency Programs (IM1)	CA	12%	27%	43%	74%
	Non-CA	21%	19%	39%	62%
	Non-CA - Low	14%	16%	36%	35%
	Non-CA - High	27%	27%	38%	87%
Have Taken Actions to Reduce Energy Use (IM3)	CA	41%	50%	65%	95%
	Non-CA	47%	57%	69%	95%
	Non-CA - Low	35%	56%	71%	93%
	Non-CA - High	59%	59%	66%	97%
Have Policy for Selecting Energy-Efficient Equipment (DM9)	CA	10%	14%	25%	61%
	Non-CA	23%	15%	22%	38%
	Non-CA - Low	15%	16%	24%	33%
	Non-CA - High	31%	13%	21%	44%
Long-Term Investment Analysis Applied to Energy Efficiency Investments (DM11)	CA	15%	44%	72%	95%
	Non-CA	30%	41%	62%	75%
	Non-CA - Low	23%	37%	62%	86%
	Non-CA - High	38%	48%	64%	62%

Because previous research has shown that own/lease has been a powerful explanatory variable and because we have observed such differences between CA and non-CA samples, we explored whether any of the differences in the above four variables were a function of the differences in own/lease. We first explored whether any of the differences on the above four variables between the CA and non-CA samples were statistically different using chi-square and logistic regression. We found no statistically significant differences. We then attempted to examine these differences using logistic regression while controlling for whether one owns or leases their space, whether one is in the CA or the non-CA group, and the interaction of these two variables. Again, no significant differences emerged. The small number of observations in Stratum 1 partly accounts for these non-significant results.

Key findings include the following:

- The observed differences between the CA and non-CA groups on the above four variables are not statistically significant. However, this may be at least partially due to the small number of observations in the lowest stratum. As a result, any significance tests may not have enough statistical power for any these observed differences to emerge as statistically significant.
- The differences were not statistically significant for those who own their facility or for those who lease their facility.

An examination of the frequency tables reveals:

- While a smaller percent of small CA establishments and a larger percent of large CA establishments participated in energy efficiency programs, a comparison of results for CA and non-CA high-energy-efficiency markets indicates that both markets have shown higher participation levels for larger customers (as seen by comparing Question IM1 results for Stratum 1 and Stratum 4).
- For the other energy efficient action indicators (Questions IM3, DM9, and DM11), CA market percentages tend to be lower than non-CA percentages both in the high energy efficiency areas and the low energy efficiency areas.
 - ⇒ This finding implies that differences between CA and non-CA Stratum 1 establishments are not a function of small customer targeting in the non-CA markets. For the most part, the low-energy efficiency states have not provided much energy efficiency support for any of the size groups, yet the smaller surveyed establishments reported higher energy efficiency levels than their CA counterparts.
 - ⇒ The most likely explanations for the differences between energy efficiency activities for small establishments in the CA and non-CA markets are: (1) statistical anomalies, and (2) asymmetrical response rates inside and outside of California.

To explore whether any of these differences were statistically different, we used chi-square analysis. However, none of the differences emerged as statistically significant. We attempted to examine these differences using logistic regression while controlling for whether one owns or leases their space, whether one is in the CA or the non-CA groups, and the interaction of these two variables. Again, no significant differences emerged. The small number of observations in Stratum 1 partly accounts for these non-significant results.

6

PARTICIPANT CUSTOMER RESPONSES

In this section, we present responses to a set of structured interviews we conducted with a representative sample of customers that are participating in the 1998 NSPC Program. These interviews were conducted in October 1998, thus readers should note that many of the key Program milestones such as Detailed Project Application (DPA) submittal and approval had not yet been reached when these interviews were conducted. The following topics are covered in this section:

- Key Findings from Participant Customer Interviews (Section 6.1)
- General Characteristics of the Participant Customer Sample (Section 6.2)
- Program-related Decisions (Section 6.3)
- Program Participant Experience with Third-Party Firms (Section 6.4)
- Analysis of First-Year Net Savings Impact (Section 6.5)
- Process-Related Issues (Section 6.6)
- Comparison of Participant and Baseline Characteristics (Section 6.7)

Readers who have followed this project through previous interim reports should note that, since the publication of the Second Interim Report, data were collected from an additional seven participating customers (bringing the total number of completed interviews to 41). This section updates the results previously presented. Since the time of the initial interviews, we found that two of the 41 projects were subsequently canceled. Thus, for Sections 6.1, 6.4, and 6.6, only 39 customers are used in the analysis. However, for Sections 6.2, 6.3, 6.5, and 6.7, which are concerned with participants' attitudes, knowledge, and behavior as well as process-related issues, information from all 41 customers was considered useful and included in the analysis.

6.1 KEY FINDINGS FROM PARTICIPANT CUSTOMER INTERVIEWS

Key findings from the customer participant interviews are summarized below:

- ***Estimates indicate that slightly less than half of the projects associated with the Program are likely to have occurred anyway*** (i.e., without the Program). Stated inversely, slightly more than half the projects appear to have been implemented as a result of the Program. The estimated net-to-gross ratio (NTGR) is 0.53
⇒ Non-Sponsors have a higher NTGR than Self-sponsors (0.64 versus 0.38)
- ***Participating customers were found to be mostly large, high energy using facilities.*** The information analyzed in this section provides strong evidence that the end-user participants in the 1998 NSPC are some of the largest, most sophisticated customers in the population and differ markedly from the average customer.

- ***Most NSPC participants have previously participated in energy efficiency programs.*** The majority of sampled customers (almost 62%) reported that they participated in *other* utility energy-efficiency rebate programs in California sometime over the past *two years*.
- ***Most participants actively improve their energy efficiency.*** Ninety-two percent of customers had taken specific actions to improve their facility's energy efficiency within the past two years.
- ***Three-quarters of the customers said that they had come up with the energy efficiency improvement idea themselves,*** either to pursue it by themselves or to be convinced by a third party to go forward.
- ***Non-sponsor customers were more likely than self-sponsors to report that third-party firms played a significant role in their decision to implement the NSPC projects.***
- ***The most common type of contract between participating customers and third-party firms is fee-for-service*** (61%), followed by energy performance contracts (21%) and "other" (15%). Only non-sponsors engaged in performance contracts for program projects.
- ***The value of the incentives and the Program's flexibility were the features most commonly mentioned as Program strengths.*** The majority of the respondents also reported that the prices were set appropriately both in terms of level and in terms of their differentiation based on end use.
- ***Customers complaints of Program weaknesses were that there was "too much paperwork" and that the forms were "too detailed and complicated."***
 - ⇒ Concerns were raised by customers about the DPAs and the measurement and verification (M&V), with specific mentions of the complexity of the forms, labor, expense, and time needed to meet the M&V requirements.
- ***Most of the customer respondents indicated that the utility and their contractors were helpful during various aspects of the NSPC process,*** while only a small number said they found them less than helpful.
- ***The majority of the customer comments on how to improve the Program concerned making the Program simpler.*** Several comments from the customer respondents revolved around the fact that they were not in touch with firms that provide EESP-type services. Better advertising and outreach was also an improvement that several customer respondents mentioned.

6.2 GENERAL CHARACTERISTICS OF THE PARTICIPANT CUSTOMER SAMPLE

In this subsection, we present characteristics of the sample of customer participants for which in-depth interviews were conducted in October and November 1998. The sample was stratified into three size strata based on the amount of accepted incentives associated with each *unique* customer in the Program (i.e., on a statewide basis across utilities). A comparison of the sample obtained versus the statewide population of NSPC participants (as of October 1998) is shown in Table 6-1. Our approach was to attempt to complete as many interviews as possible of customers with the 10

largest incentive amounts in the Program (Stratum 1 in the table) and to draw random samples from within each of the remaining two strata. This approach resulted in our capturing approximately 69% of the accepted incentives with a sample of 39 of the 92 unique customers in the Program at that time. The information obtained from two other interviews given to respondents who eventually dropped out of the NSPC Program were not used throughout Section 6.2.

Table 6-1
Stratification of Participant Customer Sample by Accepted Incentives (As of October 1998)

Strata	Definition	Sample		Population	
		n*	Incentives	N*	Incentives
Stratum 1	Top 10 customers, incentives (>\$800,000)	10	\$16,220,102	10	\$16,220,102
Stratum 2	Incentives > \$300,000 and <=\$800,000	11	\$5,282,966	24	\$10,473,541
Stratum 3	Incentives below \$300,000	18	\$1,832,485	58	\$7,125,810
	All Strata	39	\$23,335,553	92	\$33,819,453

* n, N = numbers of unique customers with at least one accepted application.

As shown in Table 6-2, of the total sample of 39 participating customers, 54% sponsored their own applications while the remaining 46% used a third-party EESP as the project sponsor. These proportions are somewhat different from the proportions among all customer participants (see Section 9). This is because non-sponsors were more difficult to contact and were more inclined to either refuse the interview or defer scheduling beyond our deadlines for this report.

Table 6-2
Breakdown of Customer Participant Sample by Sponsorship

Participant Type	Sample	Percent of Sample
Used Third-Party EESP as Sponsor	18	46%
Self-Sponsored	21	54%
Total	39	100%

In Table 6-3 we present the distribution of the customer sample by the utility for which applications were submitted. As can be seen, the sample is fairly well distributed across customers with applications in each of the three utilities' programs. Note that two multi-site customers had applications accepted across two or more utilities.

Table 6-3
Breakdown of Customer Participant Sample by Utility

Utility	Sample	Percent of Sample
PG&E	15	37%
SCE	16	39%
SDG&E	8	20%
PG&E/SCE/SDG&E	1	2%
SCE/SDG&E	1	2%

In Table 6-4 we present respondents' reported number of full-time equivalent employees (FTE), average monthly usage, and average square footage at the sites for which project applications were submitted for NSPC funding. These figures, though varying widely, indicate that the average customer participant is fairly large by almost any measure.

Table 6-4
FTE, Electric Usage, and Square Footage of the Participating Sites of Sampled Customers

Total Customer Sample	Monthly Electric Bill	Full-Time Workers	Square Footage
Number of Observations	25	34	30
Mean	161,085	894	453,650
Standard Deviation	302,767	1,822	655,545
Median	50,000	293	191,000
3rd Quartile	100,000	750	313,000
1st Quartile	20,000	100	75,000
Minimum	6,000	7	5,500
Maximum	1,200,000	10,000	2,800,000

In Table 6-5 we present the breakdown of the sample based on market segment, whether the participating customer is an institutional type of entity, and whether they are part of a single site or multi-site organization. The number of institutional customers (defined as education, government, or hospital) is somewhat over-represented in the sample, however, as shown in Section 9, these customers constitute a large percentage of the Program population as well (approximately one-third of accepted incentives). Another characteristic of the sample can be seen in Table 6-6, where just over half of participating customers are also customers that are part of multi-site organizations (56%). The sample of customers also is fairly balanced across market segments, and includes respondents from each of the major segments in the Program population. Table 6-7

shows the percentage breakdown of facility ownership versus lease arrangement. The vast majority of facilities in the sample (80%) were owned by the participating customer.

Table 6-5
Breakdown of Sample by Institutional versus Non-Institutional?

Participant Type	Sample	Percent of Sample
Non-institutional	22	56%
Institutional	17	44%

Table 6-6
Breakdown of Sample by Single versus Multi-Site

Location Type	Sample	Percent of Sample
Only location	15	38%
Part of multi-site organization	24	62%

Table 6-7
Breakdown of Facility Ownership or Lease Arrangement

Response Type	Number of Respondents	Percent of Respondents
Own this space	32	80%
Lease this space	6	15%
Own and lease	2	5%

In Table 6-8 we present: (1) a listing of the six end-user segments that customers fell into; (2) the number of customers that fell into each of those categories; (3) the incentives allocated to those customers for each of the six segments; and (4) the percentage of total Program incentives accounted for by the sampled customers for the six segments. The segment with the greatest number of customers was the industrial and refrigerated warehouse segment with 11, however, the incentives allocated to that segment were only the fourth highest (\$3 million). The grocery segment had the most incentives (\$6.8 million) with only four participating customers. Grocery was followed closely by government (\$5.2 million) and education (\$4.4 million). Grocery customers' incentives were completely accounted for in the sample with all four (100%) being interviewed. Education and government dollars were also well represented in the customer interviews, at 80% and 84% of their segment population totals, respectively.

Table 6-8
Breakdown of Participant Customer Sample by Market Segment

End User Segment	Sampled Customers with Accepted Incentives	Sampled Customers' Incentives	Sampled Incentives as Percent of Program Incentives
Commercial-Other (includes non-government hospitals)	6	\$1,091,732	25%
Education	8	\$4,434,476	80%
Government	8	\$5,183,659	84%
Grocery	4	\$6,812,340	100%
Industrial & Ref. Warehouse	11	\$2,981,405	47%
Property Management	2	\$2,831,942	61%
Grand Total	39	\$23,335,553	69%

With regard to recent participation in other energy efficiency programs, more than half of the participating customers in our sample (62%) reported that they participated in other utility energy efficiency programs in California sometime over the past two years, as shown in Table 6-9 and Table 6-10. The extent of such past participation does appear to vary based on whether or not customers are self-sponsors, with self-sponsors showing a higher percentage of past participation. The majority of these customers participated in programs in which they received a rebate or other financial incentive for energy efficiency projects, as shown in Table 6-11. Table 6-12 shows that the vast majority (92%) of both sponsor and non-sponsor customers had taken non-NSPC related actions to improve facility energy efficiency within the past two years.

Table 6-9
Participation in Other Energy Efficiency Programs in the Last Two Years

Response Type	Number of Responses*	Percent of Responses
Yes, non-NSPC utility program outside of CA	2	5%
Yes, non-NSPC utility programs in CA	23	62%
Yes, EPA Green Lights or Energy Star (federal)	1	3%
Yes, other federal	1	3%
Yes, state government	0	0%
Yes, local government	0	0%
No	11	30%
Don't know	1	3%
Number of unique responses	37	106%*

*Multiple responses were accepted.

Table 6-10
Participation in Other Energy Efficiency Programs in
the Last Two Years by Sponsorship

Response Type	Non-Sponsor	Sponsor
Yes - Utility programs outside CA	0	2
Yes - Utility programs in CA	9	13
Yes - Federal programs	1	0
No - None	10	4
Don't Know	0	1

Table 6-11
Past Participation by Type of Program

Response Type	Number of Respondents	Percent of Respondents
Information only	0	0%
Rebate only	14	61%
Both	9	39%

Table 6-12
Taken Specific Actions in Past Two Years, Besides NSPC, to Improve Energy Efficiency?

Response	Sponsors		Non-Sponsors		All Respondents	
	No. of Respondents	% of Respondents	No. of Respondents	% of Respondents	No. of Respondents	% of Respondents
Yes	15	83%	18	100%	33	92%
No	3	17%	0	0%	3	8%
Total	18	100%	18	100%	36	100%

6.3 PROGRAM-RELATED DECISIONS

In this subsection, we present the responses to a variety of questions asked of participating customers regarding their decision-making processes for their NSPC-related projects. The following topics are covered in this section:

- Origin of Decisions and Role and Significance of Third-Party Firms
- Reported Importance of Program to Implementation Decision

6.3.1 Origin of Decisions and Role and Significance of Third-Party Firms

To begin with, customers were asked to describe the situation that led to their decision to pursue installation of the projects in the NSPC applications. A variety of reasons for deciding to implement the projects were stated, as shown in Table 6-13. The two most common responses were “wanted to reduce energy costs” and “needed to replace older equipment.” Remodeling or expansion was cited by 7 percent of respondents as the major driver toward consideration of the efficiency projects, while the goal of obtaining more control over equipment was cited by 5 percent. Note that some customers gave two responses to this question because their applications covered a wide number and diversity of sites and projects for which they had more than one primary reason or because there was more than one reason for pursuing implementation.

Table 6-13
Description of Situation that Led to Decision to Pursue Project Installation

Response Type	Number of Responses*	Percent of Responses
Needed to replace older equipment	19	34%
Needed to add equipment because of a remodel, build-out, or expansion	4	7%
Wanted to reduce energy costs	28	49%
Wanted more control over how the equipment was used	3	5%
Other	3	5%
Number of unique respondents	40	100%

*Does not sum to 40 respondents due to multiple responses.

When asked how they first heard about the energy-efficiency opportunities for which they were applying for NSPC incentives, respondents gave a variety of answers, as shown in Table 6-14. The most common responses were that they learned about the opportunity from a previous installation with which they or their organization was involved, or that they heard about it from a contractor or architect/engineer. With respect to how they learned of the NSPC itself, 47% indicated that it was through a utility representative, as shown in Table 6-15.

Table 6-14
Means by Which Customers Learned of EE Opportunities Included in NSPC Applications

Source	Percent of Respondents (n=40)
Previous Installation	25%
Contractor	15%
Architect/Engineer	15%
Vendor	10%
Utility Representative or Program Literature	10%
ESCO	10%
Other/General Knowledge	10%
Friend/Business Colleague/Professional Association	3%
Don't Know	2%
Unregulated ESP	0%
Other Non-Utility Literature, Including Trade Publications	0%

Table 6-15
Means by Which Customers Learned About the 1998 NSPC Program

Source	Percent of Respondents (n=40)
Utility Representative or Program Literature	47%
Contractor	15%
Architect/Engineer	8%
Unregulated ESP	8%
NSPC Workshop	8%
Don't Know	5%
Other NSPC Marketing Materials	3%
ESCO	3%
AB 1890 Filings	3%
Vendor	0%
NSPC Website	0%
Friend/Business Colleague/Professional Association	0%

Customers also were asked to pick from a list of descriptions differentiating their role versus the role of any third-party firms in developing the project ideas included in their applications. Responses to this question are shown in Table 6-16 on an overall basis and by sponsorship type in Table 6-17. The majority of customers (44%) claim that they themselves developed the project ideas, however, a large share of these customers also said that a third party was responsible for actually *convincing them* to pursue implementation of the projects. A noticeable difference in the responses to this question can be seen when segmented by sponsorship. In this case, only 28% (5 of 18) of non-sponsors (third party) decided to pursue installation without the influence of a third party, whereas 59% of self-sponsors (13 of 22) report that this was the case.

Table 6-16
Description of Process to Decide to Install Energy Efficiency Equipment

Response Type	Number of Respondents	Percent of Respondents
Developed idea ourselves and pursued on our own	17	44%
Developed idea ourselves but were convinced by a third-party to pursue installation	12	31%
Received idea from third party and were also convinced by this party to pursue installation	6	15%
Other	1	3%
Don't Know / Refused	3	7%
Total	39	100%

Table 6-17
Description of Process to Decide to Install Energy Efficiency Equipment by Sponsorship

Response Type	Number of Respondents	
	Non-Sponsor	Sponsor
Developed idea ourselves and pursued on own	5	13
Developed idea ourselves but were convinced by a third-party to pursue installation	9	3
Received idea from third party and were also convinced by this party to pursue installation	3	3
Other	0	1
Don't Know / Refused	1	2

Both sponsor and non-sponsor customers were asked whether they were working with firms that were not identified as the sponsor of record on the NSPC application. Specifically, sponsors were asked if they were using any third-party firms for any aspect of the projects on their applications, while non-sponsors were asked if they were working with any firms *in addition to* their NSPC project sponsors of record. The responses to these questions are shown in Table 6-18. Note that all of the sampled self-sponsors report that they are working with at least one firm on some aspect of their application or were planning to do so in the future, and that half of the non-self-sponsors say they are working with another firm besides the firm of record.

The result above should not lead to the conclusion, however, that the firms behind the scenes are necessarily playing a major role in the process. In many cases, the third-party firms mentioned were described as simply installing projects or completing design specifications that the customer had mostly developed themselves. This can be seen in the distribution of responses to a question asked about how significant a role third-party firms played in participating customers' decisions to install the NSPC-related projects. These responses are shown in Table 6-19. Just under half of self-sponsors say that the third-party firm played a relatively insignificant role in their decision to go forward with the NSPC project. At the same time, the fact that the other half of sponsors did

indicate that third-party firms played an important role in their decision is also an important finding. (Note that these results are consistent with those presented in Table 6-17.) Also of interest is the fact that 12 of 15 non-sponsors report that their third-party sponsors played a “very” or “extremely” significant role in their decision to pursue the NSPC-related projects.

Table 6-18
Number of Companies Customers Report They Are Working with as Part of Applications

Sponsorship	Response Type	Number of Respondents	Percent of Respondents
<i>Sponsor</i>	Working with one or more firms	14	82%
	Planning to work with one or more firms in addition to EESP sponsor	3	18%
	Total	17	100%
<i>Non-Sponsor</i>	Working with only EESP sponsor	8	50%
	Working with one or more firms in addition to EESP sponsor	8	50%
	Total	16	100%

Table 6-19
Significance of Role Played by Third-Party Firms in Customers’ Decisions to Install NSPC-Related Energy Efficiency Equipment

Significance	Sponsor		Non-Sponsor	
	Number of	Percent of	Number of	Percent of
Insignificant	8	44%	2	13%
Somewhat significant	2	11%	1	7%
Very significant	3	17%	9	60%
Extremely significant	5	28%	3	20%
Total	18	100%	15	100%

* Responses for non-sponsors refer to the significance of the third-party sponsor of record on the NSPC application, not of any other companies that may be involved in the process.

6.3.2 Reported Importance of Program to Implementation Decision

Sponsors and non-sponsors were both asked two key questions that center on the role of the NSPC incentives in their decision to implement the projects included in their NSPC applications. One question phrases the influence of the incentives in terms of their significance, while the other question is phrased in terms of what they would have done had the incentives not been available. The responses to these two questions are presented in Table 6-20 and Table 6-21. Note that these questions are intentionally designed as cross checks of customers’ responses. Use of this cross check exposed some inconsistency.¹ The majority of respondents (67%) stated that the incentives

had a “very” or “extremely” significant influence of their decisions. At the same time, however, only two respondents out of 36 indicated that they “definitely” would not have installed the project without the incentive, while 63% said they “probably” or “definitely” would have installed the projects anyway. These results indicate that the Program incentives are likely to have had at least a “partial” effect on customers’ decisions and that, despite the fact that most customers rate the importance of incentives highly, a significant portion indicate that they were already planning to implement a significant share of the NSPC projects. This issue is addressed further in Section 6.5, Analysis of First-Year Net Savings Impact.

Table 6-20
Self-Reported Significance of Incentives on Decision to Install NSPC Projects

Response Type	Number of Respondents	Percent of Respondents
Extremely Significant	9	25%
Very Significant	15	42%
Somewhat Significant	9	25%
Insignificant	3	8%
Total	36	100%

Table 6-21
Self-Reported Likelihood of Installing Projects Without NSPC Incentives

Response Type	Number of Respondents	Percent of Respondents
Definitely Would Not Have Installed	2	6%
Probably Would Not Have Installed	7	19%
Would have installed some*	4	11%
Probably Would Have Installed	16	44%
Definitely Would Have Installed	7	19%
Total	36	100%

*“Would have installed *some*” was given by several respondents because their answers differed for *portions* of their projects (these were always multi-project applications). In some cases, these portions were end-use based, while in others they had to do with the number of projects that would have been pursued.

¹ This level of inconsistency, however, is not uncommon for this combination of questions. This combination of questions has been used on a large number of utility program impact studies and there are a variety of techniques for interpreting the differences between them. This issue is addressed further under the net-to-gross section.

6.4 PROGRAM PARTICIPANT EXPERIENCE WITH THIRD-PARTY FIRMS

Participating customers were asked a series of questions concerning their experiences with third-party firms, either as the Program-sponsoring EESP in the case of non-sponsor customers, or as a contractor hired by the sponsoring customer to help with the NSPC process. Interestingly, customers who chose to sponsor their own projects were more likely to receive multiple bids for their NSPC project than customer non-sponsors (71% for sponsors versus 22% for non-sponsors). On average, just under half (44%) of the NSPC customers received multiple bids for the project (see Table 6-22). The breakdown of the different types of contracts is shown in Table 6-23. Energy performance contracts (EPCs) were only used with third parties by non-sponsor customers, where they comprised 41% of contractual agreements for this group. The most common type of contract with third parties was the fee-for-service contract (61%), followed by EPCs (21%) and “other” types of contracts (15%).

Table 6-22
Received Multiple Bids for NSPC Project?

Response	Sponsors		Non Sponsors		All Respondents	
	No. of Respondents	% of Respondents	No. of Respondents	% of Respondents	No. of Respondents	% of Respondents
Yes	10	71%	4	22%	14	44%
No	3	22%	14	78%	17	53%
Don't know	1	7%	0	0%	1	3%
Total	14	100%	18	100%	32	100%

Table 6-23
Type of Contractual Arrangement with Third Party Firm?

Response	Sponsors		Non Sponsors		All Respondents	
	No. of Respondents	% of Respondents	No. of Respondents	% of Respondents	No. of Respondents	% of Respondents
EPC	0	0%	7	41%	7	21%
Fee-for-Service	13	81%	7	41%	20	61%
Other	2	13%	3	18%	5	15%
Don't know	1	6%	0	0%	1	3%
Total	16	100%	17	100%	33	100%

Answers to questions about customers' previous exposure to NSPC project-related services and products are shown in Table 6-24. Slightly more than half of the respondents (58%) said that the products and services provided by third parties for NSPC projects were not new to them; 37% said that they were new products or services, however.

Table 6-24
Were Products and Services Provided New?

	Sponsors		Non-Sponsors		All Respondents	
Response	No. of Respondents	% of Respondents	No. of Respondents	% of Respondents	No. of Respondents	% of Respondents
Yes	4	36%	3	38%	7	37%
No	6	55%	5	32%	11	58%
Don't know	1	9%	0	0%	1	5%
Total	11	100%	8	100%	19	100%

Customers' plans to use the third-party firms in the future are displayed in Table 6-25. The majority of both sponsors and non-sponsors stated that they would be willing to use the third-party firms that they were involved with again (72% and 53%, respectively).

Table 6-25
Plans to Use Third-Party Firms in the Future

	Sponsors		Non Sponsors	
Response Type	Number of Respondents	Percent of Respondents	Number of Respondents	Percent of Respondents
Yes - Plan to use	13	72%	8	53%
No - Do not plan to use	2	11%	1	7%
Don't know	3	17%	6	40%
Total	18	100%	15	100%

Table 6-26 shows the entity that will be meeting the M&V requirements for the customer sponsors' projects. Slightly more than half of the respondents stated that they will be utilizing an outside firm for this M&V work (53%). A third said they would be doing the work in-house and 13% said they would do this using both in-house and outside staff.

Table 6-26
Staffing Approach to Meeting M&V Requirements for Self-Sponsors

Response Type	Number of Respondents	Percent of Respondents
In-house staff	5	33%
Outside firm	8	53%
Both in-house and outside firm	2	13%

6.5 ANALYSIS OF FIRST-YEAR NET SAVINGS IMPACT

In this subsection we present results of estimated net-to-gross ratios (NTGRs) for the 1998 NSPC. The purpose of the NTGR is to provide an estimate of the percentage of the immediate, gross first-year savings that would not have occurred in the absence of the NSPC Program, apart from any later savings due to Program-induced changes in market structure or functioning. The method used to calculate these ratios is based on self-reported information provided by participating customers. This method has been used extensively as part of previous utility program impact evaluations for programs that require site-specific net-to-gross calculations.² The NTGR method utilized is described in detail in Section 12, Evaluation Methods, of this report. Net savings analyses are generally associated with the program impact evaluations conducted by utilities from 1990 to the present under the resource acquisition framework of evaluating program benefits. There are two principal reasons that analysis of net first-year savings are also considered in the current NSPC evaluation. First, the NSPC Program has been justified as a source of both beneficial market effects and immediate net savings; and, second, analysis of NTGR will contribute to assessment of overall program effects, although a number of other issues will also be considered. The following topics are covered in this section:

- Caveats to NTGR Calculations
- Estimates of NTGRs

6.5.1 Caveats to NTGR Calculations

Note that the following important caveats must be kept in mind while considering the NTGRs presented in this report:

- The survey questions upon which the NTGR analysis is based were asked *during the program implementation process* in October 1998. Thus, questions were asked about customers' project decisions that are, in some cases, still not finalized. It should be expected that the final composition of built projects that are part of the NSPC will differ somewhat from what is currently expected based on the Basic Project Application (BPA) and DPA processes.
- Second, the NTGRs are just one of many factors that must be taken into consideration in assessing the NSPC Program.
 - ⇒ In particular, it is important to keep in mind that the NTGRs come out of an impact evaluation framework. We believe that this type of information continues to be useful

² For a discussion of issues related to estimating net-to-gross ratios using participant self-reports see *Quality Assurance Guidelines for Statistical, Engineering, and Self-Report Methods for Estimating DSM Impacts*, prepared for the California Demand Side Management Advisory Committee: The Subcommittee on Modeling Standards for End Use Consumption and Load Impact Models, April 1998.

under the current policy rules, but does not, by itself, answer many of the broader market-effects questions that were raised in the first report produced for this evaluation.³ Preliminary analyses of these market effects are provided in Section 10 of this report and will be continued in one or more future studies that will have the benefit of using results from this 1998 evaluation as a baseline from which to measure hypothesized effects.

- ⇒ For customers that are not self-sponsors, the NTGRs reported here generally capture the bundled effect of the NSPC, which includes *both* the effect of the incentives and the effect of EESPs' marketing efforts on participating customers' decisions to proceed with energy-efficiency projects. These marketing efforts of the EESPs may or may not be effected by the NSPC Program intervention as well.
- ⇒ To the extent that EESPs' marketing efforts have not changed because of the Program, these marketing efforts should be considered naturally occurring activities (i.e., activities that would have occurred anyway in the absence of the Program). Thus, if non-sponsor customers report that the *Program* (which is defined for non-sponsors to include the incentives *and* the actions of the EESP) had a strong influence on their decisions, then it is possible that some of what is reported as the positive effect of the Program may actually be attributable to the naturally occurring EESP marketing activities. Conversely, if changes in EESP marketing practices do occur because of the Program, then customer actions associated with these changes (as opposed to changes attributed only to Program financial incentives) need also to be considered in attribution of the Program's total effect on the market.
- Finally, the results presented here are based on small samples of participating customers (21 sponsors and 18 non-sponsors). Note, however, that the population of participating customers is also small, totaling 92 at last count and that the customer participant sample was stratified to capture a large percentage of the accepted incentives (about 69% of the incentives were captured).

For all of the reasons above, the information presented must be treated with caution and should not be overly relied upon at this stage of the current evaluation. At the same time, we believe the results are very important to policy-makers and stakeholders and must, therefore, be presented so that decisions on policy and program design can be informed by all of information and analysis that is relevant and available.

³ *Evaluation of Nonresidential Standard Program Contract Program, First Interim Report: Update on Work-in-Progress*, prepared by XENERGY Inc. and SERA for the California Board for Energy Efficiency and Southern California Edison Company, August, 16, 1998.

6.5.2 Estimates of NTGRs

Overall NTGRs were calculated on both a weighted and unweighted basis. The two information sources used to make the customer-specific estimates are the customer's responses to the *significance* and *likelihood* questions presented at the end of Section 6.3. Initial NTGR values are assigned for each of these questions, as shown below, and then averaged:

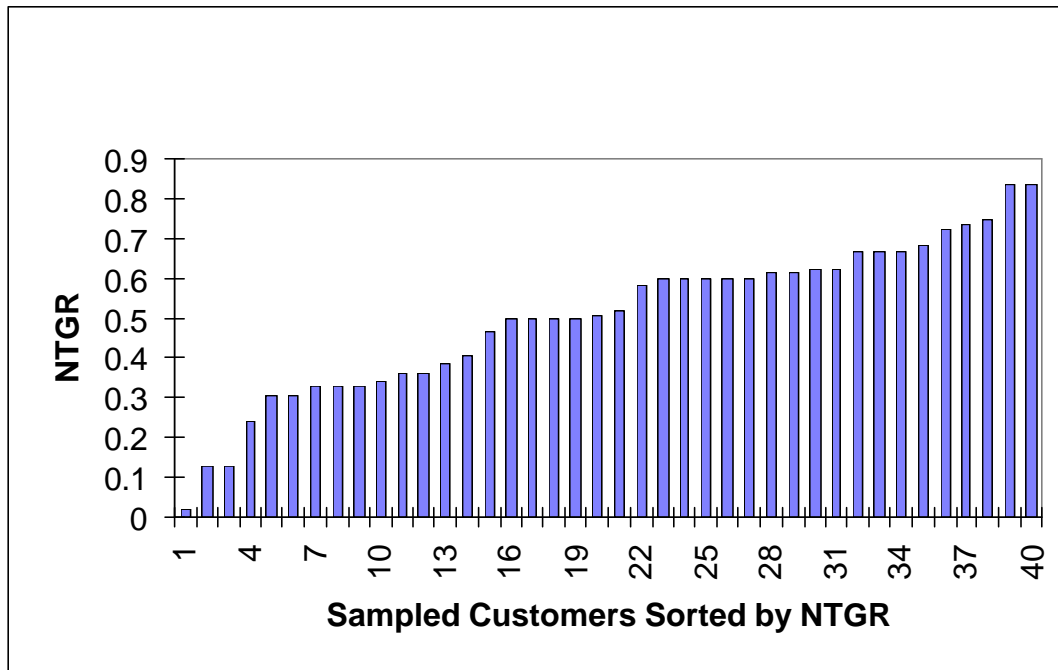
Likelihood of Installing Anyway	Assigned Value	Significance of Incentive	Assigned Value
Definitely would not have installed	1.0	Extremely significant	1.0
Probably would not have installed	0.677	Very significant	0.677
Probably would have installed	0.333	Somewhat significant	0.333
Definitely would have installed	0.0	Insignificant	0.0

Other, more minor adjustments are made to account for partial effects, if necessary, based on responses to other questions.⁴

Both the weighted and unweighted estimates involve averaging across individual customer NTGRs that were calculated for each unique customer in the sample. The range of NTGRs calculated across the sampled customers is shown in Figure 6-1. As can be seen from the figure, the majority of the NTGRs fall in the 0.35 to 0.70 range. There is only one case of an absolute zero and no cases of absolute ones. Thus, in almost every case, analysis of the responses indicated that the NSPC had a *partial* effect on customers' decisions. This follows from the fact that the majority of respondents fell into the middle of both the significance and likelihood questions and often did so in an inconsistent manner. That is, 17 of the 24 customers who said the Program incentives were "very" or "extremely" significant in their decision, also said that they "probably" or "definitely" would have made all or some portion of the same project decisions without the incentives. Conversely, there are no cases in which the respondents said that the incentives were "somewhat" significant or "insignificant" and also said that they "probably" or "definitely" would not have made the same project decisions anyway.

⁴ There are a number of procedures for assigning NTGRs based on self-reported information. More detail on the calculation method is presented in Appendix F.

Figure 6-1
Range of NTGRs Across Sampled Customers



The unweighted and weighted average NTGRs for the NSPC are shown in Table 6-28. The unweighted average of the NTGRs is 0.49, while the weighted estimate, which takes into account the size of the incentive in relation to the sampled customers, is 0.53. In either case, it appears that slightly less than half of the projects associated with the NSPC Program are likely to have occurred in the absence of the Program. In addition to estimating the overall NTGRs, we also estimated the figures segmented by whether customers were their own application sponsors. These estimates are shown in Table 6-29. The fact that the estimate NTGRs are lower for the customers that self-sponsored in comparison with those who came into the Program via a third-party EESP's application is a preliminary indication that projects with EESPs as third-party sponsors were more likely to have been stimulated by the 1998 NSPC. As mentioned previously, however, these NTGR results should not be confused with whether or not sustainable changes in EESP or customer behavior are occurring as a result of the Program.⁵

⁵ Note that this trend, even if substantiated with further research, does not answer the question of whether the change observed is sustainable in the absence of incentives. For example, positive attribution of the effect of the program incentives does not bear on whether EESPs will be able to continue inducing more energy-efficiency projects in the absence of NSPC incentives.

Table 6-27
Overall Net-to-Gross Ratios

Estimate	Net-to-Gross Ratio (n=39)
Weighted	0.53
Unweighted	0.49

Table 6-28
Net-to-Gross Ratios by Customer Type

Customer Type	Net-to-Gross Ratio (Weighted)	Net-to-Gross Ratio (Unweighted)
Sponsor (n=20)	0.38	0.375
Non-Sponsor (n=19)	0.64	0.60

Finally, though the data are fairly limited and sample sizes small, we also can compare the significance ratings that customers gave for both the role of the incentives and the role of third-party firms in their decision-making and implementation processes. These comparisons are shown in Table 6-29 and Table 6-30 for non-sponsor and sponsor customers, respectively. For those customers who were not sponsors, their answers to the significance questions are highly correlated, that is, when they reported that the incentives played a significant role in their decision, they also reported that the overall value provided by the EESP was significant.⁶ For self sponsors, the results appear to be somewhat inversely related, that is, respondents are more likely to say third-party firms are less important when they report that the incentive had a significant effect on their decisions. It also is interesting that in some cases self-sponsors report that third-party firms played a significant role in their decisions, even when they report that the incentives did not.

⁶ A reminder here of one of the limitations of self-reported discussed in Appendix F: *customer's often have difficulty sorting out the relative weight of numerous possible influences on energy-related decisions.* In particular, one reason for the observed correlation between the high significance ratings of the incentives and EESP may be an actual correlation in that the customers needed the EESP's assistance in order to meet the program requirements and thereby obtain the incentives.

Table 6-29
Comparison of Significance Rating for Incentives versus
Third-Party Firm for Non-Sponsor Customers

Significance	Significance of Incentives*		Significance of Third-Party Firm	
	Number of Respondents	Percent of Respondents	Number of Respondents	Percent of Respondents
Insignificant	1	7%	2	13%
Somewhat significant	3	20%	1	7%
Very significant	5	33%	9	60%
Extremely significant	6	40%	3	20%
Total	15	100%	15	100%

* Responses for non-sponsors refer to the significance of the third-party sponsor of record on the NSPC application, not of any other companies that may be involved in the process.

Table 6-30
Comparison of Significance Rating for Incentives versus
Third-Party Firms for Self-Sponsors

Significance	Significance of Incentives		Significance of Third-Party Firms	
	Number of Respondents	Percent of Respondents	Number of Respondents	Percent of Respondents
Insignificant	2	10%	8	44%
Somewhat significant	5	25%	2	11%
Very significant	10	50%	3	17%
Extremely significant	3	15%	5	28%
Total	20	100%	18	100%

6.6 PROCESS-RELATED ISSUES

In this subsection we present participant customers' responses to questions concerning various implementation aspects of the NSPC Program. *It is critical to keep in mind while reviewing this section that the interviews were conducted before most customers had gotten deeply involved in the DPA submittal and approval process.* These questions were generally asked on an open-ended basis. In some cases we have post-coded responses, while in others we use direct (un-ascribed) quotations in order to allow respondents to speak in their own voices. Also note that the questions asked are, for the most part, an identical subset of the process-related questions asked in our first-round interviews with third-party EESPs presented in Section 7. The topics covered include the following:

- Strengths and Weaknesses of the Program
- Pricing Issues
- Program Forms and Requirements
- M&V Requirements
- Opinions on Administration
- Recommendations for Improvements

6.6.1 Strengths and Weaknesses of the Program

We began the process part of the interview by asking customers to express, in their own words, what they thought were the strengths and weaknesses of the NSPC Program. The range of responses are shown in Table 6-31 and Table 6-32. By far the most consistently mentioned statement on the Program's benefits referenced the incentives themselves, which were cited by 47% of respondents. The next most cited benefits were "encourages energy efficiency" and "allows completion of marginal projects." The first of these is a fairly generic statement in support of the Program's goals, while the second can be interpreted as a more indirect reference to the role of the incentives. Other aspects of the Program that customers reported liking were the "value established through the M&V" and the added "credibility in financing projects," cited by a combined 19%.

Table 6-31
Primary Strengths of the NSPC Program

Response Type	Percent of Sample (n=38)*
1. Incentive	47%
2. Encourages energy efficiency	21%
3. Allows the completion of marginal projects	13%
4. Value established through M&V	11%
5. CPUC/utility-sponsored program adds credibility in financing projects	8%
6. Energy savings continue after program	8%
7. Well-structured procedures	5%
8. Flexible	5%
9. Differential end-use pricing	5%
10. Allows for broad projects	5%
11. Builds relationships between customers and consultants	5%
12. Program provides a good service	3%
13. Knowledgeable people involved	3%
14. Training workshops and seminars	3%
15. Statewide standardization	3%

*Total does not sum to 100% due to multiple responses.

When discussing their opinions on their perceived weaknesses of the Program, there was more convergence in the responses, although fewer had any opinion at all. Most of those without an opinion on the weaknesses of the Program were non-sponsors. These respondents tended to lack opinions on several of the process questions because, by nature of their non-sponsorship, they reported a lack of direct experience with several aspects of the program details. Of the 26 respondents who offered opinions on the Program's weaknesses, such as "too detailed/complicated" and "too much paperwork" were cited by more than half (57%). The next most cited issue was "problems with M&V." A number of other issues were raised by one or two respondents that ranged as shown in the table.

Table 6-32
Primary Weaknesses of the NSPC Program

Response Type	Percent of Sample (n=26)*
1. Too detailed/complicated	38%
2. Too much paperwork/repetition	19%
3. Problems with M&V	15%
4. Costs of participation eat up much of the savings	12%
5. Poor administration of Program	8%
6. Projects/application timeline problems	8%
7. Lack of Program advertisement/information	8%
8. Site generation not included	4%
9. Only projects in pipeline are possible for this Program	4%
10. Problems with utility's implementation contractor	4%
11. Incentives go to EESP, not customer	4%
12. Too long for acceptance notification	4%
13. Uncertainty over final incentive	4%
14. Not enough incentive	4%
15. Misleading information from EESP	4%
16. Contractors hinder business	4%

*Total does not sum to 100% due to multiple responses.

6.6.2 Pricing Issues

Customers were asked the following three questions related to the Program's pricing approach:

- Are the standard prices appropriate?
- What are the pros and cons of end-use pricing?
- What would be the impact upon your current projects if the prices had been 25% higher or lower?

When asked on an open-ended basis whether they believe the prices for the 1998 NSPC were appropriate, the vast majority of customers (24) said "yes." In fact, none of the customers said "no," although six said they "did not know" or "had no strong opinion." When asked to elaborate on the pros and cons of end use pricing, most who had an opinion supported the relative differences between the end uses in the current structure, in particular, the higher incentive for HVAC and lower incentive for lighting. The following comments were obtained:

What Are the Pros and Cons of End-Use Pricing?

Favor Current Pricing Structure

- “Pushes market to do HVAC, which are more costly projects”
- “Too many small companies would be in there were there one price - leading to more lighting projects”
- “It's good, helps keep lobbyists out of it”
- “Nothing bad, we like HVAC having greater incentives, anyone can do lighting, good direction”
- “We’re used to measure specific pricing, but it may be more reasonable to do end-use because then you can choose what's best for you without being concerned about differences in incentives associated with specific measures”
- “It is a good system because projects that save more money (HVAC) should be compensated more”
- “HVAC is good as is, weighted higher because of costs”
- “Gives us a chance to promote specific types of projects, though not enough difference to make us do HVAC”
- “Yes, the large value out of HVAC is worth extra price”

Concerns About Current Pricing Structure

- “Differences seem arbitrary”
- “Don’t see why there is a difference in Other and HVAC”
- “Lighting should be low, Other should be higher”
- “Incentive is better if it is measure-specific. The con is that this would be more complicated”

When asked to answer the hypothetical question on what the impact on proposed projects would have been if the 1998 NSPC prices were 25% higher or 25% lower, approximately one-third responded, for each case, that there would be no change in their decisions, as shown in Table 6-33. About a third also said they would have pursued fewer NSPC-related projects had the prices been 25% lower, and about half said they would have pursued even more projects if the prices had been 25% higher.

Table 6-33

Self-Reported Impact on Current Projects if Prices Had Been 25% Lower or 25% Higher

Response Type	Impact of Prices	
	25% Lower Percent of Sample (n=33)	25% Higher Percent of Sample (n=33)
No change/continue the same	36%	39%
Would not have done NSPC	6%	--
Would still participate, but to a lesser degree	33%	--
Would have pursued more projects	--	52%
Not sure	24%	9%
Total	100%	100%

Comments Related to Prices 25% Lower:

- “Wouldn't deal with Program if much lower than 25% less”
- “Would not have made a difference because we would still have exceeded cap, and still got the same incentive as now”
- “Fairly significant, may have done part of project only”
- “More in questionable range”
- “No, because we had to do projects anyway, and we still would save through NSPC Program”

Comments Related to Prices 25% Higher:

- “That would be great, but we would like to see no cap amount”
- “May have done more on HVAC side”
- “Might have incorporated more because we still have lots of old equipment that needs to be replaced”

6.6.3 Program Forms and Requirements

Several questions were asked of NSPC customers regarding their opinions about Program-related forms, timing of form submittals, and payment timing procedures. Answers to questions about the reasonableness and clarity of the documentation are shown for sponsors, non-sponsors, and all customers in Table 6-34. It can be seen in this table that the majority of the respondents' answers stated that the documentation was both clear and reasonable (43% of responses). Eighteen percent of the responses were negative, saying that the documentation was not clear and reasonable. It should be noted that all of the “no” responses came from customers that were sponsors. Comments on the forms made by the respondents (see *Related Comments* below the table) include: that they are difficult for certain end uses, that they require too much information, that the font size is too small, and that there were contradictions between the website documentation and utility-supplied documentation. Three respondents indicated that some components of the documentation were clear and reasonable while other components were not.

Table 6-34
Are the Forms Reasonable, and the Documentation Clear?

Response Type	Percent of Sample (N=32)		
	All	Sponsor	Non-Sponsor
Yes	43%	31%	12%
No	18%	18%	0%
Some reasonable, some not	9%	6%	3%
Don't know	30%	6%	24%

Comments Related to Perceived Reasonableness and Clarity of NSPC Documentation Forms:

- “Yes, application is clear, forms are more difficult for chilled water loop”
- “No, too long, not clear, contradictions between website and Utility copies (website was not updated), Utility didn’t have the updated ones at first, it took two months for us to acquire the correct paper work”
- “No, the forms are not reasonable - they are asking way too much, and the font is too small.”
- “No, we’ve got to get too much name plate information, large jobs generate volumes of useless paper. Why do you need them when you are running a model like TRACE - it is a waste of time”
- “No, applicable to HVAC and lighting, very weak on manufacturing savings - not geared towards this type of work”

Table 6-35 shows the breakdown of customers’ answers to the questions about the reasonableness of the BPA and the DPA requirements. It can be seen that there was a greater percentage of customers that stated that the BPA was reasonable than customers stating that the DPA was reasonable (81% versus 27%, respectively). There were relatively few complaints about the BPA, with only 3 percent of the customers saying that the requirements were unreasonable. The majority of those customers answering “Don’t know” were non-sponsors who may not have had much involvement with the BPA. A quarter of customers (23%) indicated that the DPA requirements were not reasonable. A summary of the additional responses stated by the customers indicated that they feel the forms require too much detail and require information to be collected for purposes for which the respondents are unclear.

**Table 6-35
Are the BPA and DPA Requirements Reasonable?**

BPA (n=31)		DPA (n=30)	
Response Type	Percent of Sample	Response Type	Percent of Sample
Yes	81%	Yes	27%
No	3%	No	23%
Don't know	16%	Don't Know	50%

DPA-Specific Comments:

- “Cumbersome, too much detail required. DPA is intimidating, we couldn’t do it without our EESP, the DPA is drawn out, an excessive amount is demanded”
- “The requirements are far-fetched, the expectations are too high”
- “Too detailed, way too many hours involved in meaningless name plate data collection”
- “Too many forms, we don’t see the value of having many of the forms”

The majority of respondents were content with both the time allowances between the BPA and DPA submittal (71%) and with the payment procedures (68%) (see Table 6-36 and Table 6-37). Only 6 percent of the respondents indicated dissatisfaction with timing while only 3 percent said that payment timing was unreasonable. Additional comments are provided in Tables 6-36 and 6-37.

Table 6-36
Are the Periods of Time Allowed Between the BPA and DPA Reasonable?

Response Type	Percent of Sample (N=34)
Yes	71%
No	6%
Don't know	23%

Related Comments:

- “Would be O.K. if reasonable accommodations for extensions are granted, we are moving forward but just need time - we have already committed money and time to project”
- “Yes, but they should respond quicker to applications”

Table 6-37
Are Payment Procedures and Timing Reasonable?

Response Type	Percent of Sample (N=34)
Yes	68%
No	3%
Don't know	29%

Related Comments:

- “Timing of payments is a problem. We need to come up with capital up front, but we don’t believe in this concept”
- “Where is the benefit for self-sponsors to shell out money before the project - we have already committed to buying equipment”
- “Very reasonable because it assures that savings occur in the project (as opposed to getting one lump sum at the beginning)”

6.6.4 M&V Requirements

Customer respondents were asked several questions about the NSPC Program’s M&V requirements, including questions regarding the following:

- The clarity and reasonableness of the requirements,
- Whether or not they believe it will be easy or difficult to meet the M&V requirements, and
- The influence the requirements may have had on the measures proposed.

Table 6-38 shows that the majority of respondents felt that the M&V requirements were both reasonable and clear (57% and 50%, respectively). Only 20% of the customer sample felt the requirements were unclear and 13% felt they were not reasonable. Roughly a third of respondents answered “Don’t know” for each question. Note, however, that there was not a strong correlation between “Don’t know” answers and whether or not the customer was a self-sponsor. A few of the larger participants with multi-site applications indicated that they believe the M&V requirements should allow more sampling across similar sites. Note that although a minimum of respondents did not believe the requirements were clear and reasonable, these tended to be the respondents that provided specific comments on the M&V as well (see comments following the table).

Table 6-38
Are the M&V Requirements Clear and Reasonable?

Requirements Clear		Requirements Reasonable	
Response Type	Percent of Sample (n=30)	Response Type	Percent of Sample (n=31)
Yes	50%	Yes	57%
No	20%	No	13%
Don't know	30%	Don't know	30%

Related Comments (Referring to “Clarity of Requirements” Only):

- “No, not for the non-EESP person”
- “No, not even clear to the utility”
- “No, the plan development process was not reasonable”
- “No, could have been clearer, all of the questions from our engineering firms were in the M&V section. It was trickier, but perhaps because they lack experience”
- “Yes, but what it takes limits participation”

Related Comments (Referring to “Reasonableness of Requirements” Only):

- “Don’t know, they are tedious but provide accountability”
- “No, expectations are too high, requirements focus on words (excessive documentation) rather than energy savings. Daily savings verification is excessive to request”
- “There is no standard way to do M&V to reduce costs across similar sites. For example, we have several projects that go across virtually identical buildings, but we have to do a lot of work to verify each one, whereas having a sample should have been adequate”

Table 6-39 shows the breakdown of responses to the question concerning the estimated degree of difficulty the customer thought they would have with regard to meeting the M&V requirements. Most respondents (64%) indicated that the M&V will be “easy,” while only 10% felt that they may have difficulty meeting the requirements. Several of the comments mentioned that the process of meeting the M&V requirements would be expensive (see comments below).

Table 6-39
How Easy or Difficult Will It Be to Meet the M&V Requirements?

Response Type	Percent of Sample (n=32)
Easy	64%
Difficult	10%
Don't know	26%

Related Comments:

- “Will not be difficult, but will be expensive”
- “Requirements are difficult. We have an EMS and it should be acceptable to fulfill M&V requirements, but they require something different. So we had to buy expensive loggers and bring them to every facility every 3 weeks”
- “Easy because equipment we will purchase will provide excessive information”
- “Difficult because our facility isn’t on individual meters”

Table 6-40 shows that the majority of respondents felt that the M&V requirements had no bearing on the mix of measures proposed in their applications (61%), while only 12% felt these requirements did indeed influence their choice of projects. For these customers, they mostly reported that the M&V requirements caused them to exclude some projects from their applications because of the associated complexity.

Table 6-40
Did M&V Requirements Influence Mix of Measures Proposed?

Response Type	Percent of Sample (n=33)
Did influence	12%
Did not influence	61%
Don't know	27%

6.6.5 Opinions on Administration

Customer respondents were questioned about their experiences with the utility or the utility's administrative representatives (see Table 6-41). Most of the respondents indicated that the utility and their contractors were helpful during various aspects of the initial phases of the NSPC process (74%), while only 9 percent said they found them less than helpful. Positive responses included comments about expertise, high interest levels, quick responses, and positive comments about engineers and managers. Several of the comments made by those who had positive reviews of the utilities mentioned that they felt that the utility's "hands [were] tied" by NSPC regulations, rendering them less useful than they could have been. The two negative comments from respondents included one that felt the utility did not fully understand the Program and another comment that the utility was not providing the necessary information to that customer's EESP. Also of note is the fact that both of the negative comments came from customers in the same utility territory.

Table 6-41
Were Utilities or Their Representatives Helpful During Initial Phases of the Program?

Response Type	Percent of Sample (n=35)
Yes	74%
No	9%
Don't know	17%

Related Comments:

- “Yes, not a lot of expertise, very nice though, and sometimes conflicting information. High staff turnover can be the cause of this”
- “Yes, quick responses, seemed interested, sent out good engineer”
- “Yes, only at times, often not responsive”
- “Yes, not much involvement though, hands tied”
- “Yes, have some input (been good) but have had their hands tied by the process questions”
- “Yes, although they sometimes contradicted the paper work (he spoke with a project manager and a tech person, and found they contradicted each other)”
- “Yes, with utility, excellent, they have good managers”
- “No, they haven’t been very forthcoming with all the information his sponsor has needed”
- “No, they may not understand program”

6.6.6 Comments About Program Improvement

Finally, customer respondents were asked to give any thoughts they had on how the Program could be improved, especially for smaller customers. The majority of the comments concerned making the Program simpler (see Program Simplification below for those comments). These respondents generally felt that: (1) the Program requested too much unnecessary information, and that (2) the Program was so complicated that the use of an outside firm was a necessity, even though several of these customers were not comfortable with using these types of firms. Several comments from the respondents revolved around the fact that they were not in touch with firms that provide EESP-type services. These comments are under Spur Customer/EESP Relationship. Better advertising was also an improvement that six customer responders mentioned, these comments are below under Increase Program Awareness. Other comments offered are shown below under Other.

Program Simplification

- “Make the DPA simpler. For example we had to change the original lighting survey forms we did so that they fulfilled the DPA requirement, but the originals were reasonable”
- “Lots of hassles, cut down”
- “Need much more simplification through DPA & M&V. Some carry over from old program would be useful. Using unit values per ton for chiller savings. All SPC work can eat up the savings. Ridiculous to do speed from motor plate, all you need is HP”
- “Without EESP application would be too much, make simpler”
- “Time and paperwork involved, M&V is difficult for them (small companies), had to sub out”
- “Simplify program, I don't trust ESCOs much”
- “Remove the hoops; easier for school districts, easier way to prove the energy savings”
- “Improve the paperwork, making it more clear”
- “If there were an optional DPA application for simpler projects, smaller companies may be more interested”
- “Simplify the paperwork, it's too complicated for most people to do on their own”

Spur Customer/EESP Relationship

- “Aggregating projects is hard if you don't know other companies, and if this process was easier, smaller customers would be more inclined to participate, and would be less intimidated by ESCOs”
- “Program needs more of a selling point. Get more designers involved (accessible to customers), to learn more directly like in utility market”
- “Put people in touch with EESP”

Increase Program Awareness

- “Advertising was weak - reached late in game”
- “Administration could get the word out better”
- “More publicity”
- “Increase the awareness about the program”
- “Bring information directly to owners”
- “Could have more people available to explain things to owners”

Other

- “We didn't have a problem with old utility programs. Our utility already knew about our process related end-uses. Why change and make us use new contractors?”
- “If they could allow people to apply and give more time to organize financing plan because budget schedules can be limiting and prevent participation if only a small window to apply”

6.7 COMPARISON OF PARTICIPANT AND BASELINE CHARACTERISTICS

Data were collected using the Participant Survey instrument to draw qualitative comparisons between our sample and the population in general, using the California-based baseline survey results. The baseline averages presented in this section are all energy weighted; more detailed information on baseline survey results is presented in Section 5. The information presented in this section provides strong evidence that the end-user participants in the 1998 NSPC are some of the largest, most sophisticated customers in the population and differ markedly from the average customer. Comparisons are made in the following categories:

- Awareness and Knowledge of Energy Efficiency Opportunities and Barriers
- Electric Supply Choices
- Organizational Decision-Making Processes
- Familiarity with and Use of Performance Contracting

6.7.1 Awareness and Knowledge of Energy Efficiency Opportunities and Barriers

Program participants were asked two series of questions regarding: (1) their knowledge of energy savings opportunities, and (2) their feelings regarding the significance of particular barriers to implementing cost effective energy-efficiency opportunities. It can be seen in Table 6-42 that participants rated their knowledge of energy-saving opportunities high compared to how the average customer assessed themselves. Participants self-rated knowledge scores were most similar to baseline customers in Stratum 4, though they were somewhat lower than were this group's scores.

Table 6-42
Mean Energy Efficiency Knowledge Ratings¹

Self-Reported Knowledge of	Participants	Baseline - Overall Average	Baseline - Stratum 4
Lighting opportunities	7.5	5.9	8.5
HVAC opportunities	7.3	5.4	8.3
Other opportunities	7.5	5.5	7.8

¹Ratings use a 0 to 10 Scale (0, "completely uninformed" to 10, "extremely well informed").

The ratings of the potential barriers to implementation of energy efficiency opportunities are shown in Table 6-43. All of the proposed barriers were rated in the "moderately" significant range, with means between 4.0 and 5.6 on 0 to 10 scale. "Uncertainty over information provided by firms proposing efficiency-related projects" was rated the highest at 5.6. The lowest ratings were for "time and cost associated with selecting contractors and negotiating project terms," which had a mean rating of 4.0. When comparing the barrier scores of participants to those from the baseline survey one trend emerges: participants rated all barriers lower than did the average

customer in the baseline survey, with the exception of the “disagreements between decision-makers” barrier which was scored virtually equally between the two groups.

Table 6-43
Barriers to Implementing Energy Efficiency, Mean Ratings*

Self-Reported Significance of Barriers	Participants	Baseline - Overall Average
Uncertainty over whether actual savings will be equal to or greater than estimated savings	5.2	6.3
Time and cost associated with selecting contractors and negotiating project terms	4.0	6.1
Uncertainty over <i>information provided</i> by firms proposing efficiency-related projects	5.6	6.0
Disagreements between decision makers within your organization over the relative importance of energy-efficiency related investments compared with other capital projects	4.9	4.8
Lack of access to financing for energy-efficiency related projects	4.1	4.9

*Ratings use a 0 to 10 Scale (0, “completely insignificant” to 10, “extremely significant”).

6.7.2 Electric Supply Choices

Participant customers and baseline respondents were asked a series of questions regarding their electric supply choices. It can be seen in Table 6-44 that a much higher percentage of participant customers than baseline respondents had received offers from electricity suppliers other than their local regulated distribution company (94% for participants and 55% for baseline respondents). However, 79% of Stratum 4 baseline respondents had received offers from suppliers, a figure considerably closer to the 94% for participants. Table 6-45 shows the breakdown of deregulation activity for participants and baseline respondents. More than half (56%) of the participants reported having “selected new supplier,” while only 10% of the baseline market (in terms of energy load) had done the same. The 56% figure is significantly higher than even the 31% of Stratum 4 respondents that reported switching suppliers.

Table 6-44
Received Offers to Purchase Electricity from Suppliers Other Than LDC?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Yes	33	94%	55%
No	2	6%	39%
Don't know	0	0%	5%

Table 6-45
Activities with Respect to Deregulation

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Selected new supplier	18	56%	10%
Actively shopping	3	9%	5%
Waiting to see market unfold	5	16%	37%
No intention to switch	4	13%	16%
Not evaluated situation yet	2	6%	39%

Non-Choosers

Those customers who had not chosen an electricity supplier different from their utility were asked about the importance of energy efficiency. Their answers to two of the more critical questions are presented in Tables 6-46 and 6-47. It can be seen in Table 6-46 that participants and baseline respondents indicated that they were offered energy efficient products or services as part of a package in similar percentages, 19% for participants versus 22% for baseline respondents. Table 6-47 shows that about the same percentage of participants (79%) and baseline respondents (73%) felt that the inclusion of energy efficiency services in energy packages deals was either “very important” or “somewhat important.”

Table 6-46
Energy Efficiency Products or Services as Part of a Package?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Yes	3	19%	22%
No	12	75%	70%
Don't know	1	6%	8%

Table 6-47
Importance of Including Energy Efficiency Services as Part of a Package?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Very Important	5	36%	39%
Somewhat Important	6	43%	34%
Somewhat Unimportant	1	7%	15%
Very Unimportant	2	14%	10%

Choosers

Those customers who had chosen an electricity supplier different from their utility were asked a subsequent series of questions. Their answers to three of the more critical questions are presented in Tables 6-48 through 6-50. Table 6-48 shows the decision factors used to choose an electric supplier. A slightly higher percentage of participants than baseline respondents choose their new electric supplier based at least in part on factors other than price (86% and 79%, respectively). Answers to the question of whether electric supply offers included energy efficiency products or services as part of a package are shown in Table 6-49. Those who chose a new electric supplier indicated higher incidences of offered electricity deals containing these services as part of the package than those who had yet to choose a new supplier. Stratum 4 baseline respondents again more closely resemble participants, as 79% of them had offers that contained energy efficiency services or products.

Table 6-48
Electric Supplier Chosen on Price or Other Factors Too?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Price only	2	14%	16%
Price and other factors	12	86%	79%
Don't know	0	0%	5%

Table 6-49
Energy Efficiency Products or Services as Part of a Package?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Yes	11	69%	51%
No	5	31%	44%
Don't know	0	0%	5%

Table 6-50 shows the attitudes of choosers regarding the relative importance of electric supply offers containing energy efficiency products or services. Nearly three times the percentage of baseline respondents than participants stated that they felt that it was “very important” for offers to include energy efficiency products or services (35% of baseline respondents and 13% of participants).

Table 6-50
Importance of Offers Including EE Products or Services?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Very important	2	13%	35%
Somewhat important	8	50%	28%
Somewhat unimportant	2	13%	18%
Very unimportant	4	25%	16%
Don't know/refused	0	0%	2%

6.7.3 Organizational Decision-Making Processes

Comparisons of decision-making processes between participants and baseline respondents are shown in the tables that follow. There is a significant difference in assignment of energy use and cost responsibility between participants and baseline respondents (see Table 6-51). Forty-one percent of all baseline respondents have not assigned these responsibilities to a specific group or individual, while only 11% of participants have yet to make these assignments. Stratum 4 baseline respondents indicated that no one was assigned responsibility for energy uses and costs in only 7 percent of the cases, much closer to the participants' 11% than the 41% average across all baseline strata. Table 6-52 shows the breakdown of corporate strategies for funding energy efficiency related improvements. It can be seen that participants have a higher probability of having an annual budget specifically for these types of improvements (30% for participants versus 18% for baseline respondents). Again, Stratum 4 results from the baseline survey were close to those of the participants with 28% indicating they had annual budgets for efficiency.

Table 6-51
Energy Use and Cost Responsibility Assigned to a Specific Person or Group?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Yes - in-house person	20	54%	40%
Yes - group or staff	11	30%	15%
Yes - outside contractor	2	5%	2%
No	4	11%	41%
Don't know	0	0%	2%

Table 6-52
Source of Money for Energy Efficiency Improvements?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Have annual budget for EE	11	30%	18%
Money must come from other budgets	26	70%	70%
Don't know	0	0%	12%

Table 6-53 shows that a considerably higher percentage of participants than baseline respondents indicated that they have developed a policy(s) for the selection of energy efficient equipment (61% and 25%, respectively). However, 61% of Stratum 4 baseline respondents also indicated that they have such policies, the exact same percentage as participants. The answers to the question about the application of long-term investment analysis to energy equipment selection is presented in Table 6-54. Once again, there is a considerable difference between the participant and baseline responses (92% and 58%, respectively), however; 95% of Stratum 4 baseline respondents said that they did apply these long-term investment criteria.

Table 6-53
Developed a Policy for Selection of Energy-Efficient Equipment?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Yes	22	61%	25%
No	14	39%	72%
Don't know	0	0%	3%

Table 6-54
Apply Long-Term Investment Analysis to Energy Equipment Selection?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Yes	36	92%	58%
No	1	3%	38%
Don't know/refused	2	5%	5%

Both participating customers and baseline respondents gave estimates of the payback limits used by their firms to make energy-related decisions. The results of this question are shown for these two groups in Table 6-55. Almost half (46%) of participants stated that paybacks for their firms were four or more years, while only a third (34%) of baseline respondents had paybacks longer than four years. Participants had a higher payback average (4.9 years) than did baseline

respondents (3.4 years). The payback average for Stratum 4 baseline respondents (4.3 years) was significantly closer to the participant average than the average for all strata.

Table 6-55
Number of Years for Payback?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
1	3	13%	9%
2	3	13%	33%
3	7	29%	23%
4 to 5	4	17%	15%
6 to 12	6	25%	11%
> 12	1	4%	8%
Average	4.9 Years		3.4 Years

6.7.4 Familiarity with and Use of Energy Performance Contracting

Comparisons were made between Program participants and baseline respondents regarding their familiarity and use of energy performance contracts. As shown in Table 6-56, a significantly higher percentage of participating customers were familiar with energy performance contracts than were baseline respondents (61% and 30%, respectively). Seventy-one percent of Stratum 4 baseline respondents, however, indicated that they had heard of energy performance contracting prior to the NSPC Program.

Table 6-56
Heard of Energy Performance Contracting Prior to NSPC?

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Yes	22	61%	30%
No	14	39%	70%

Finally, a comparison of the percent of participant and baseline respondents who were approached by firms offering EPCs is shown in Table 6-57. Over half (56%) of participants were approached with EPC offers while just more than a quarter (27%) of baseline respondents were approached. Stratum 4 baseline respondents were more closely aligned with participants, with 72% stating that they had been approached in the past two years.

Table 6-57
Percent of Customers Approached by Any Company Offering
Energy Performance Contracting in Past Two Years

Response Type	Participants		Baseline Respondents
	Number of Respondents	Percent of Respondents	Percent of Respondents
Approached	21	55%	27%
Not approached	16	42%	70%
Don't know/refused	1	3%	3%

6.7.5 Credibility of Companies Providing Energy Efficiency Services

Comparisons of credibility ratings for firms that provide energy efficiency services are shown in Table 6-58. It can be seen several of the firm types were rated similarly by participants and baseline respondents, including local electric distribution companies, building operations and maintenance (O&M) companies, and equipment manufacturers. Contractors and engineering/architectural design firms were also rated closely, within 0.3 and 0.4, respectively, on a zero to ten scale. Table 6-59 shows participants' and baseline respondents' choices concerning the type of firm they would call on first for help concerning energy efficient services.

Table 6-58
Mean Credibility Ratings*

Type of Firm	Participant	Baseline Respondent
Engineering/architectural design firms	7.0	6.6
Energy service companies, (ESCOs)	6.7	5.6
Your electric distribution company	7.5	7.4
Building operations and maintenance (O&M) companies	5.5	5.5
Equipment manufacturers	6.1	6.2
Energy equipment contractors and installers (e.g., lighting, HVAC)	6.0	5.7
Companies, besides your electric distribution company, that provide electricity supply	6.4	5.6

*Ratings use a 0 to 10 Scale (0, "not at all credible" to 10, "extremely credible").

Table 6-59
Firms Typically Called First for Energy Efficiency Assistance

Type of Firm	Participants			Baseline
	Sponsors	Non-sponsors	All	Respondents
Engineering/architectural design firms	22%	19%	21%	14%
Energy service companies, (ESCOs)	11%	19%	15%	4%
Your electric distribution company	28%	44%	35%	65%
Building operations and maintenance (O&M) companies	0%	6%	3%	1%
Equipment manufacturers	28%	12%	21%	4%
Energy equipment contractors and installers (e.g., lighting, HVAC)	0%	0%	0%	4%
Companies, besides your electric distribution company, that provide electricity supply	11%	0%	6%	2%

In this section, we present responses to three sets of structured interviews we conducted with participant and non-participant energy-efficiency service providers (EESPs) during the course of this study. Two sets of interviews were conducted with participant EESPs, while non-participants were interviewed once. The two sets of participant interviews occurred at different points in the program implementation process. The first-round participant interviews were conducted in September and October of 1998. Re-interviews were then conducted with participant EESPs in early March 1999. The non-participant EESP interviews were conducted in February 1999.

For the purposes of this report, EESPs are defined as third-party firms that provide any of a number of energy-efficiency related products and services to end users. End users that are participating in the Program and are serving in the basic role of an EESP in developing their own project are not defined as EESPs but are classified as self-sponsoring customers (see Section 6).

The topics covered in this section are as follows:

- Overview of EESP Interview Results (Section 7.1)
- First-Round Participant EESP Results (Section 7.2)
- Participant EESP Re-Interview Results (Section 7.3)
- Non-Participant EESP Results (Section 7.4)

Note that the information presented in Section 7.2 was collected in the Fall 1998. More contemporary results are presented in Section 7.3, which presents the findings from the re-interviews of participant EESPs conducted in early March 1999. Those readers already familiar with the information presented in the Second Interim Report for this study (November 1998) may want to proceed directly to Sections 7.3 and 7.4, which present new information not previously published.

7.1 OVERVIEW OF EESP INTERVIEW RESULTS

Summaries of the key findings from each of the EESP interviews by interview-type (participant, participant re-interview, and non-participant) are provided in the subsections that follow.

7.1.1 *First-Round, Participant EESP Findings*

- *Participant EESPs are diverse, but are represented more by traditional ESCOs and retail energy service providers than by contractors and engineering design firms.*

Although most of the third-party sponsors characterize themselves as being either traditional ESCOs or retail energy service companies (that also provide electric commodity). When asked about their number of California employees, participant EESPs reported a range from five to 500, with a median of 25. The majority of firms indicated that employment levels have increased since 1996.

- ***Performance contracting is important but not dominant as a contracting product.*** Slightly less than half of participating EESPs report that performance contracting is their most important business area; however, on a percent of projects basis, performance contracting is reported to represent about one-third of activity (note, the role of performance contracting is less significant for non-participant EESPs).
- ***Participants ranged widely in size.*** For 1997, the participating EESP respondents reported a collective revenue for California based energy-efficiency related services of approximately \$175 million. The highest level reported was \$90 million, with a low of \$100 thousand and an average of approximately \$10 million. For a number of reasons, which are listed in Section 7.2, these results should be viewed cautiously.
- ***With respect to NSPC project characteristics:***
 - ⇒ On average, two-thirds of the EESPs' NSPC projects were developed with existing or referred customers, rather than with entirely new contacts.
 - ⇒ No major differences were reported between the types of contracts initiated with clients under the NSPC versus those negotiated with customers outside the program.
 - ⇒ Overall, the EESP sponsors report that they intend to pass back about 90% of the incentive to the customers.
 - ⇒ None of the respondents used the aggregation rules to assemble projects, and many felt that the aggregation rules and requirements were complex.
- ***Program strengths:*** the value of the incentives was the feature most commonly mentioned as well as its flexibility. A few EESPs also mentioned that the program helps them build credibility with end users.
- ***Program weaknesses:*** EESPs complained mostly that there was “too much paperwork” and that the forms were “too detailed and complicated.” EESPs also expressed the opinion that the M&V requirements were too intensive.
 - ⇒ A number of EESPs thought that the program's complexity and costs, and associated timing issues, reduced the program's value to customers because incentives were “whittled away” by program and participation costs
- ***The majority of EESP respondents felt that the complexity of the M&V requirements hindered their business development.*** However, a few noted that the M&V rules worked to their advantage.

7.1.2 Participant Re-Interview Findings

- **Relatively low perceived estimates of market impacts from the program.** Although participants reported limited changes in business practices and market conditions, few attributed any of these changes to the NSPC program. Most stated that the NSPC program was too small to affect the market and that there have been too few projects actually implemented to date to lead to any market effects.
- **M&V considered too expensive and out of proportion by many.** A few respondents stated that M&V practices similar to those required for the NSPC program have been adapted for use in other projects. However, the majority - especially those associated with lighting measures, which were the most commonly installed measures - stated that the M&V requirements were onerous, expensive, and overly complex. There were strong feelings that, at least for lighting, stipulated savings or simpler checks of operating hours and confirmations that the measures were in place should suffice to estimate and verify those savings. Several stated that, even for non-lighting measures, the M&V costs were very expensive and that waiting two years for verification and payment is too long to be compatible with their business.
- **Program perceived to be designed to benefit ESCOs and not other potential EESP types or deliverers of efficiency services.** Although some respondents thought that the NSPC had brought the efficiency industry to a higher level, a more common perception was that the program was designed to benefit the traditional ESCO model only, and did not necessarily meet the needs of other business models within the evolving “EES” industry. These respondents expressed the opinion that the paperwork requirements, M&V, project size threshold, and other features of the program did not work for them.
- **Significant delays in paperwork have caused difficulties and relatively few projects have been implemented.** Many of the respondents stated that the program’s paperwork was onerous, but in particular, they cited significant problems with delays in review and approvals. The participants noted several particular consequences to them, including: (1) problems with customer sites affected by delays; (2) a year after submittal, some projects have not been approved, and EESPs are still expending time and money to gain approval; (3) projects are being cleared from the wait list to begin the process for approval nearly a year after submittal; and (4) very few projects have been installed and generating savings for the end users. Although there clearly are start-up issues, many stated that the paperwork review process needed to be faster.
- **Perception that simpler programs would have delivered more efficiency.** A number of the respondents noted that they had had favorable experiences with simpler programs that they felt had been more effective in delivering energy efficiency services to the marketplace. Particularly cited were “express” rebate programs and other programs with less burdensome paperwork and M&V requirements, and consequently, fewer delays. They feel that the greater complexities associated with this program have delayed getting savings to customers.

- ***Most plan to participate in PY99, but additional changes are desired beyond those already made for PY99.*** Regardless of their opinion of the PY98 program, the funding is attractive, and the majority plan to consider participating in PY99. Importantly, several noted that their participation will be contingent on a review of the changes and a determination of whether the new revised program was a better fit within their business model and customer mix. Although a number of the respondents feel that there have been positive aspects to the changes made to the PY99 program offering (in the limited time they had to review them), others note remaining deficiencies from their point of view. The reduction in the cap was applauded. Many noted that the lower prices would hurt the program economics, but none seemed to feel that deals would be lost because of the lower incentives. Many hoped that the M&V would be much simpler, and significant changes for lighting were especially desirable. Faster paperwork flow was one of the most desirable changes. However, several respondents seemed skeptical that the “small” program had been simplified sufficiently to encourage participation, and were concerned about the restriction that customers could not serve as their own EESP for the small program.

7.1.3 ***Non-Participant Interview Findings***

- ***The Overall Level of Interest in Participating in the NSPC is limited:*** Future participation in the NSPC program among firms not participating in last year's program is likely to be limited. Awareness of and interest in the NSPC program among out-of-state firms appears to be limited. Out-of state non-participant firms are not likely to become active participants in the NSPC program unless working with a large account that asks them to implement energy efficiency services for facilities within California.
- ***Some Non-participant EESPs Have Concerns with the Program Design:*** In-state non-participant firms that are aware of the program indicate that, in many ways, the program is not compatible with the manner in which they are accustomed to doing business. Problems included uneven communication about the program, concerns about program timing, delays, impacts on customer pocketbooks, and the complexity of the M&V.
- ***Additional Marketing May Attract Additional EESP Participants:*** The program may be of interest to Mechanical Engineering and Contracting firms that are not intimately familiar with the program but may be able to utilize the program in niche markets that they serve. Targeted marketing to these firms may bring in new players. Other California non-participants indicated they would be likely to participate in a redesigned program if the program was simpler and was more sensitive to customer needs.
- ***Trends in Performance Contracting Are Not Yet Clear:*** There is a great deal of ambiguity regarding the future of performance contracting. While some larger firms note that they are pursuing this business area quite actively, others have pulled out and are forging long-term customer relationships through other avenues.

7.2 FIRST-ROUND, PARTICIPANT EESP INTERVIEW RESULTS

The purpose of the first-round, participant EESP interviews was to obtain early information on a variety of topics important to both our process evaluation and the broader baseline study that is also a part of this project. The specific topical areas covered in this section include the following:

- Business Characteristics of the Participant EESP Sample
- Process-related Issues
- NSPC-related Project and Marketing Characteristics
- General Perspectives on Energy Efficiency

As noted at the outset of this section, the information presented in Section 7.2 was collected in the Fall of 1998. More contemporary results are presented in Section 7.3, which presents the findings from the re-interviews of participant EESPs conducted in early March 1999. Those readers already familiar with the information presented in the Second Interim Report for this study (November, 1998) may want to proceed directly to Sections 7.3 and 7.4, which present new information not previously published.

7.2.1 *Business Characteristics of the Participant EESP Sample*

Sample Completed and EESP Subgroup Classification

In order to provide practical feedback on the program in time for input into the program redesign effort, the consultant team conducted a preliminary round of interviews with a sample of non-customer program sponsors, which as mentioned above, we refer to herein as energy-efficiency service providers (EESPs). The sample plan was developed from program tracking data obtained from the utility administrators in mid-summer, 1998, which was before any changes had taken place in the status of wait-listed applicants for the PG&E and SCE programs. Therefore, our sample design targeted EESPs with projects that had been accepted for funding, as well as those on the wait list. The firms interviewed varied significantly in characteristics, including size of application, size and type of firm, number of applications, sponsors with projects that were funded versus wait-listed, and other characteristics. The sample was segmented based on type of EESP as shown in Table 7-1. This table also shows that the actual sample completed covered a significant share (81%) of the accepted incentives for applications with third-party EESPs as the sponsor.

Table 7-1
First-Round Sample Versus Population Characteristics of Participant EESPs
with Accepted Applications

	EESP Sample*			EESP Participant Population*			Sampled Incentives as % of Population
	n	Cust.	Accepted Incentives	N	Cust.	Accepted Incentives	
ESCO / Retail	3	4	\$5,882,650	3	4	\$5,882,650	100%
ESCO/Traditional	9	19	\$7,961,031	11	22	\$9,184,987	87%
Engineer/Contractor	5	12	\$2,323,568	12	20	\$4,979,866	47%
Totals	17	35	\$16,167,249	26	46	\$20,047,503	81%
Sampled EESPs with Wait List or canceled applications	5						
Total Participant EESP Sample	22						

*n and N refer to the number of unique EESPs in the sample and program participant population, respectively. "Cust" refers to the number of unique customers associated with applications sponsored by EESPs.

The three subgroups in the table above were defined on an *a priori* basis, that is, before interviewing the firms and asking for them to classify themselves, as follows:

- **ESCO/Retail:** This group is defined to include firms that focus on electric commodity in addition to demand side services.
- **ESCO/Traditional:** This group includes companies generally considered traditional ESCOs, generally by their own definitions or those of other industry observers.¹
- **Contractors/Engineers:** This category includes firms that would typically provide energy service provider services as an adjunct to other professional services. This group includes engineering design firms, contractors, and firms specializing in energy controls.

One objective of the participant EESP survey was to characterize the types of firms that have participated in the NSPC thus far, as well as the relative financial importance of the services that these firms provide. Participating EESPs were asked to categorize themselves into one of the subcategories discussed above. Table 7-2 provides a summary of the self-classifications by primary business area.

¹ We have generally followed the classification of traditional ESCOs presented by Dayton, et al., in "The Energy Services Company (ESCO) Industry: Analysis of Industry and Market Trends," 1998 ACEEE Summer Study, August.

Table 7-2
Self-Classification of EESPs

EESP Type	Number Self-Classifying
Traditional ESCO	14
ESCO / Retail	3
Engineer/Contractor	5
Total	22

The self-classifications were generally similar to our original *a priori* classifications with a few exceptions. Most of the firms self-classified themselves as some type of ESCO (17 of 22 respondents including, in some cases, firms we had previously classified as engineering or controls firms). Because of the limited sample and population sizes, many of the analyses that follow in this section report findings using an even simpler two group classifications: ESCOs (in which we include the traditional and newer commodity players) and non-ESCOs.

Participating EESPs were also queried as to the specific types of services that their firms provide, as well as the importance of these services in terms of their financial performance. The results of responses to these questions are summarized in Table 7-3 (note that most firms provide multiple services, hence totals may exceed the number of survey respondents). "Fee for service installations" was cited most frequently as being the top priority in terms of overall financial performance, followed closely by "performance contracting." "Auditing" (either walk-through or investment-grade) and "total energy management" were viewed as being significantly less important. "Other" services mentioned included commissioning and service & maintenance.

Table 7-3
Relative Importance of EESP Services Provided in Terms of Financial Performance

Service	No. Providing Service (defined as at least 1 project)	No. Stating Service Is Firm's Top Priority	No. Stating Service Is One of Top 3 Priority Areas
Performance contracting	15	6	11
Walk-through audits	15	0	6
Total energy management	11	1	4
Investment grade audits	13	0	4
Fee-for-service installations	16	7	13
Other	5	3	4

As evidenced in Table 7-2, a majority of firms in this survey characterized themselves as an ESCO. Importantly, as evidenced in Table 7-3, these firms were split approximately evenly in their assessment of whether performance contracting or fee-for-service installations were more important to their business. This apparent conflict highlights the fact that within the industry there

are many different interpretations of what it means to be an "ESCO." As a point of reference, the National Association of Energy Service Companies (NAESCO) and the U.S. Department of Energy (DOE) recently defined an ESCO as follows:

“...a member of the Energy Services Industry - e.g., an ESCO is a company engaged in developing, installing and financing comprehensive, performance-based facility improvement projects, typically 7-10 years in duration, centered around improving the energy efficiency and reducing maintenance costs for facilities owned or operated by customers.”²

A key limitation of this definition is that there is no consideration of the relative role of performance contracting to any particular firm’s overall business. The term “engaged” may constitute a single project of one company and virtually all revenues of another. Thus, it is not a surprise that less than half of the firms characterizing themselves as an ESCO do not state that performance contracting is their foremost line of business.

Date of Founding and Geographic Focus

Eighteen firms reported that they were founded after 1980, with eight of these founded since 1990. Three firms reported being founded within the past two years. With respect to their geographic focus, all firms reported that they have California Offices, but only six reported that the primary geographic focus of their business was in California. A summary of EESPs reported geographical foci is provided below in Table 7-4.

**Table 7-4
Geographic Focus of Participating EESPs**

Geographic Focus	Number of EESPs
National	8
California	6
International	4
Regional	1
Local	1
Declined	2
Total	22

While there was a large range in the number of years that companies have been providing services in California, the majority have been doing so within the past 10 years. In addition, the majority of participating EESPs reported that they have been marketing and developing proposals in the PG&E and SCE service areas. Only three firms reported that they were actively marketing and

² *The Energy Efficiency Project Manual, The Customer’s Handbook to Energy Efficiency Retrofits: Upgrading Equipment While Reducing Energy Consumption and Facility Operations and Maintenance Costs*, prepared by NAESCO for the Energy Fitness Program, Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy, October, 1997.

developing proposals in the SDG&E service area. In one case, an EESP explained that there is a significantly smaller industrial customer base in the SDG&E service area and, therefore, fewer opportunities for EESPs to develop projects under the NSPC.

Ownership Status and Employment Characteristics

With regards to ownership status, eleven firms reported that they were privately held corporations, two were public, and eight reported that they were subsidiaries of publicly-held corporations (two declined to state ownership status). Seven of the eight that reported being subsidiaries of public companies are subsidiaries of utilities.

When asked about their number of California employees, participant EESPs reported a range from five to 500, with a median of 25. Respondents were also asked whether employment levels at their firms had increased, decreased, or stayed the same since 1996. Responses to this question, showing that employment levels have increased at the majority of firms, are summarized in Table 7-5. Most firms reported that they expect to be adding employees during the next 6 to 12 months, while none reported that they expect to reduce the number of staff over the same period.

Table 7-5
Changes in California Based Employment Among
Participating EESPs Since 1996

Change in Employment Since 1996	Number of Responses
Employment has increased	11
Decreased	2
Stayed about the same	4
Declined	5
Total	22

Participating EESPs also were asked whether they utilized in-house staff across a variety of functional areas. Results provided by 21 of the 22 EESPs interviewed are included in Table 7-6.

**Table 7-6
Use of In House Staff by Functional Area**

Functional Area	No. Firms Using In-House Staff or Combination of In-House and External Resources
Sales and Marketing	21
Engineering	20
Project financing	11
Installation labor	10
Construction management	15
M&V	21

Approximately half of the firms are engaged in the project management and installation activities, with the remainder contracting out these services. Almost all firms complete at least part of the engineering work in-house, as well as monitoring and verification. Approximately half also provide project financing using in-house staff. When asked more specifically about financing, sixteen participating EESPs report that they provide customers with some sort of financing, with the percentage of projects that are financed ranging from 15% to 100%. Other functional areas that were mentioned included: (1) manufacturing of lighting fixtures, (2) energy auditing, (3) contracting, and (4) administrative.

Reported Revenues and Trends

For 1997, the participating EESP respondents reported a collective revenue for California based energy-efficiency related services of approximately \$175 million. The highest level reported was \$90 million, with a low of \$100 thousand and an average of approximately \$10 million. Nine firms reported an increase in sales since FY1996, with increases ranging from 20 to 100 percent. Two firms reported a decrease, while three firms reported that revenues have stayed about the same. Because only 14 of the 21 firms responded to this question, however, these results should be viewed cautiously.

It also is important to use some caution in interpreting these reported revenues. Although we asked respondents to report only revenues specific to energy efficiency improvements (excluding electric and gas commodity sales, for example) it was likely to have been difficult for some of the firms to specify revenues resulting strictly from energy efficiency. For example, firms that are engaged in providing mechanical engineering and/or environmental control services are less likely to view energy efficiency services as being distinct from the core services that they provide.

Relative Importance of Efficiency Programs to Revenues

EESPs were asked to indicate which energy efficiency programs they had participated in during 1997 or 1998 and to rank the relative importance of these programs to their revenues. This information is reported in Table 7-7. Among the NSPC participants, Federal programs appear to play a relatively minor role. In contrast, the combination of utility-sponsored rebate programs and

the NSPC are reported to be the most important. The limited attribution of Federal programs may reflect the fact that participation in these large federal performance contracting programs does not guarantee work *per se*, but rather provides pre-qualification for firms that enables them to market energy efficiency services to the government sector under the program. These federal performance contracting programs have notoriously long lead times and have not been in place very long, as a result, it will be important to monitor any changes in the importance of these programs to the ESCO industry over the next few years.

Table 7-7
Relative Importance of EE Programs in Which EESPs Participate

Program	No. Participating in Program	Most Important to Business?	Within Top 3 in Importance?
NRSPC	19	6	10
DSM Bidding	7	2	4
Utility Rebate Programs	15	6	10
Federal	7	1	3
EPA / DOE	5	0	1

Target Markets

Participating EESPs were asked to identify which end-use markets they generally target for their services. A summary of the reported target markets is provided in Table 7-8 below. Notably, fewer participating EESPs tend to target single-site retail facilities. Additionally, few EESPs in the NSPC program also target the residential sector.

**Table 7-8
Target Markets for Participating EESPs**

Market Segment	No. Firms Targeting Market
Leased Office	15
Owner-occupied	17
Retail single site	9
Multi-site retail	15
Institutional - Health	14
Institutional - Schools	15
Institutional - Gov't.	14
Industrial	15
Residential	4
Other	3

When asked to describe average project sizes, thirteen participating EESPs reported that current projects are typically larger than they were two years ago. Only three reported that current projects are smaller, while another three reported that they are about the same.

7.2.2 Process-Related Issues

Program Strengths and Weaknesses

When asked to specify the strengths of the program, the value of the incentives was the feature most commonly mentioned by the ESCO interviewees, often in conjunction with benefits related to “generating interest from customers in energy efficiency” or “providing customers with incentives and funds to proceed” with projects. Almost half of the respondents also mentioned at least one other benefit, which included: the fact that the M&V requirements were improved (e.g., short periods mandated) over DSM bidding projects (offered in-state or out-of-state), that the program helps provide credibility with customers, that it allows flexibility in projects, that it strengthens EESPs’ relationships with customers, that verified savings approaches lead to better control, and that the end-use price differentials were useful and effective. Some respondents noted that they could name no benefits of the program.

As for the perceived weaknesses of the program, most of the ESCO respondents focused their comments on four areas:

- Too much paperwork
- M&V requirements were too intensive

- Funding ran out too quickly
- Entire process is difficult to navigate and takes a great deal of time and resources

The applications were cited by many respondents as overly excessive, and several opined that the costs were too much in terms of the time and money required to fill them out. Several also complained about difficulties in communications with the utilities or their implementors around procedures and calculation methods. There is some indication that these problems were more acute during the early startup months of the program. Another respondent complained that the program did not have a high awareness level with customers.

The strengths and weaknesses were perceived somewhat differently by the five non-ESCO firms. One mentioned that the switch of the program away from a utility focus led to an increased customer orientation instead of a focus on “shareholder” or “earnings” returns (a reference to AEAP earnings mechanisms). Another mentioned financial incentives for customers, and another mentioned that the program helped provide a sense of “safety” for the customer because of the involvement of a third-party regulatory agency. The weaknesses of the program expressed by the non-ESCOs tended to be strongly-held opinions and included: concern about the lack of ability for EESPs to get customer information up-front in order to select and contact likely participants; dissatisfaction with administration of the program and related fears of bias³ very long time lags in the review by administrators, dissatisfaction with the detailed review of M&V; and reports that the paperwork for the program takes a tremendous investment of time.

Several of the non-ESCO firms also stated opinions that the program was designed for ESCOs or shared savings firms, and that the program is not well aligned with customers’ needs or the normal project development cycle. Some suggested that the program would better benefit customers if it had shorter payment periods and less complicated requirements so customers might be able to participate directly.⁴

Program Forms and Requirements

Respondents were asked to comment specifically on the BPA and DPA forms as well as the timing associated with these milestones. Roughly half of the participating EESPs thought that the forms were reasonable and the documentation clear, while the remaining half did not think they were either clear or reasonable. Negative opinions on the forms and process were generally associated with the DPAs, as the BPA forms and requirements were generally considered “reasonable” by all but one respondent. As for the DPA, about half noted that the forms and requirements were reasonable; while the other half thought they were too involved or too repetitive. Some commented that the review time took too long. Several firms claimed that it took months to get

³ Although not specifically clarified, the types of bias referred to centered on concerns that the interim administrators have a preference for programs that are designed and delivered in a manner similar to the status quo, and for service providers that they have worked with in the past.

⁴ These respondents were likely unaware that a large percentage of NSPC project sponsors are customers.

paperwork back, that the requirements were complicated, that the review was “too picky,” or noted that they got little guidance from the administrators or consultants (mentioned by about half of respondents). Over the course of the introduction of the program, a couple of respondents stated that some of the measure coding forms had changed. The changing of coding forms as the program proceeded was noted as a problem, as firms had to make sure they were using the most current forms and codes in order to get phases of their applications accepted. As stated previously, this problem seems to be mostly associated with the startup of the program.

Two-thirds of participant EESPs believed the time between the BPA and the DPA was appropriate; however, while three-quarters of ESCOs thought the time was reasonable, only about two of the five non-ESCOs agreed. About half of the respondents disagreeing with the time periods between the BPA and DPA mentioned that it was too long, however, those that disagreed noted that it takes longer to finalize non-lighting measures and felt the allotted time was appropriate. Several respondents noted that the process takes too long for the customers to begin implementation of measures. Also, several applicants again mentioned delays in administrators’ review of submittals.

Overall, the ESCOs thought that the time to file DPAs should not be shortened; most talked about the complexity, the metering requirements, or the time it takes to tie down customers as reasons to keep the length as designed. One said that an advantage to shorter windows might be that those who were faster would be able to beat the competition and get more of the program funds. Another ESCO felt that to speed up the process, the window could be shortened by 30% and that administrators could turn around the BPAs in 15 days. One non-ESCO put the pros and cons of shortening the time window as follows: shorter windows would lead to more savings for customers and more proactive projects, while, conversely, they would make it more difficult to set up M&V plans that would be accepted.

Pricing

The majority of the respondents think that the prices were set appropriately, or implied that they were fairly generous. One mentioned that the M&V was very complex given the 7.5 cents per kWh incentive level for lighting. Regarding whether the prices should be set at the “end use” level as they were, versus using one price for all kWh regardless of source or pricing at the measure level, the overwhelming majority felt that end use pricing was appropriate. One that disagreed believed that one price should be listed for all kWh regardless of measure or end use since kWh was the target. Another respondent thought measure level was more appropriate.

In generic terms, most reported that if the prices had been set slightly lower, there may not have been much change in the projects submitted. Although some noted they would have had a harder time getting the customer to say “yes,” that some projects would not have gone forward, or that they would have been smaller. Very few thought that the prices needed to be higher to get their projects going.

When asked what percent of incremental measure costs they thought were covered by the incentive levels, most respondents were unable to provide any estimate.

Title 24 Baseline Rules

The issue of whether Title 24 (or Title 20) was the appropriate “baseline” generated considerable discussion with proponents on both sides of this issue. The majority thought it was confusing to customers because the *in situ*-based calculations of their savings were different from those they needed to make under the program’s requirements. These respondents also felt that credit should be given for all savings generated. One thought Title 24 was irrelevant because they did not believe that their project was a new construction project. As this example illustrates, some respondents did not understand or agree with the rationale for the baseline. At the same time, several others did understand the rationale and agreed with it because they were concerned that without it some ESCOs would overestimate savings. In general, most respondents felt that customers (and firms) should be able to get the full “rewards” for finding buildings that generated large savings and improvements. These examples show that a number of EESPs either do not understand or do not accept the underlying policy intentions and justifications of the baseline rules and their origin with respect to rate-payer funded efficiency incentives.

M&V Rules

The majority of respondents feel that the M&V rules have hindered their business development - generally, because the requirements are too extensive. A small minority (15%) report the M&V requirements have helped them and twice that (30%) say there has been no impact on their normal business development procedures. An encapsulation of the most frequently mentioned comments regarding M&V is provided below:

- The NSPC’s M&V requirements are too complicated, expensive, and, in the words of some respondents, an “unnecessary expenditure of resources” for what the program is trying to accomplish.
- The paperwork is complex.
- Sponsors report that they had difficulty understanding and anticipating what would and would not be accepted for an M&V plan.

Some firms did not seem to have significant problems with the M&V requirements. One firm (an ESCO) said that the M&V requirements were only mildly different from their standard in-house procedures. Another said they were familiar with these types of requirements from their experience with projects in New Jersey. Still, another firm noted that for larger new buildings, much of the submetering requested for the M&V may already be in place, but that this is not generally true of older buildings.

Those firms that felt the M&V requirements were too extensive had several specific comments. Several firms weighed in that the M&V was unnecessarily complex and costly. One firm noted that they had established a whole profit center doing M&V, and another said that a number of firms that hadn’t been in business one year earlier had approached them about doing the EESP’s M&V for them. Another firm said that the M&V requirements were more involved than what they usually do for a 10 to 15 year performance contract, and that the M&V eats up a significant share of the

savings (stating that they had to work out compromises to keep the costs below 30% of the incentives).⁵ Another respondent indicated that two customers had dropped out of the program because of the delays and the expense associated with the M&V aspects of their projects. Finally, one noted in particular that the M&V forms were organized in a way that they did not believe was as compatible as it should be with their lighting measures.⁶

M&V was not mentioned by most respondents as a significant factor influencing the types of measures proposed. Some of the non-ESCOs did mention, however, that they felt that the M&V encouraged very simple measures and did not lead to creativity in measures. One non-ESCO noted that they explicitly omitted more sophisticated (and less widely utilized) lighting measures because of the complexity of M&V that would be involved (specifically mentioning controls and daylighting measures).

Aggregation Rules

For most respondents, aggregation was either a fairly unknown issue or the respondents did not believe they needed to use the program's aggregation features because they had focused successfully on large customers. No EESPs reported that they considered aggregating customers. Those that cared about involving smaller sites suggested that the major way to increase participation by smaller firms was to "keep it simple" (something they didn't think the current program did), require less paperwork, speed it up to a 3-6 month process so the customers are paid more quickly, or provide additional program funds (so more funds are available and not all tied up by a few large projects). One respondent that indicated they had examined the issue said that they believed that it would take significantly more time to do M&V for aggregated customers because detailed forms and comprehensive M&V are required for each site.

Market Share Limits

With respect to the market share limits, about 20 percent of participating EESP respondents (all of which were ESCOs) claimed that they had come up against the 30 percent limit in planning or execution, or that they had not been able to do work for some of their major customers. These perceptions appear unfounded, however, based on the program database information (see Section 5), which indicates that only one firm was even near the limits in the first phase of the program, and that none were near the 30 percent limit after release of fourth quarter funding.

One final potential procedural issue with this program has been the fact that in 1998 the NSPC attracted a significant share of applications from self-sponsoring end users. One question around this customer self-sponsorship has been whether or not EESPs were asking customers to sponsor their own projects in order for the EESP to avoid the market share limits. In all, only five of the responding firms reported that they have submitted bids with the customer as a sponsor. These

⁵ As a note, although the respondent mentioned 30% of incentives for M&V, the program rules cite a 15% figure.

⁶ They noted that the M&V for lighting concentrates on the number of switches (which is unnecessary, especially since many large buildings turn out the lights via central control panels). They noted that the forms are organized around fixture types, but should instead be organized around areas of a building to allow compatible operating hours and other more logical reporting organizations.

results indicate that this is not a widespread practice and that customers are most likely truly playing a lead role in packaging and applying for incentives under the program. In addition, interviews with customer sponsors indicate that, although these end users are generally working with a variety of different firms on various aspects of their projects and applications, the customers are taking a strong overall project management role in almost all cases.

7.2.3 NSPC Project Characteristics

Project Development

As shown in Table 7-9, on average, about two-thirds of the EESP's NSPC projects were developed with existing or referred customers, rather than with entirely new contacts. This figure was lower for non-ESCO sponsors - half of the non-ESCOs projects were reported to be with entirely new customers. Respondents were also asked whether 1998 NSPC projects were developed in 1997. A summary of responses to this question is presented in Table 7-10. For ESCOs, less than a quarter of the firms reported that the projects were originally developed with 1997 utility rebates in mind; the non-ESCO interviewees said they had developed half the projects originally for utility rebate programs. Several projects were also said to be in the pipeline but were not associated with any programs.

Table 7-9
Percent of EESP NSPC Projects with Existing versus New Customers

EESP Type	Percent of Projects with Existing Customers	Percent of Projects With New Contacts
All EESPs (n=19)	65%	35%
ESCOs (self-classified)	69%	31%
Other (n=4)	50%	50%

Table 7-10
How the NSPC Project Was Developed

How Project Developed	All (n = 18)	ESCO (self-classified) (n=14)	Other (n=5)
New for NSPC	47%	53%	30%
In 1997 pipeline not expecting rebate	19%	14%	32%
In 1997 pipeline for rebate	34%	33%	38%

Contracts: Type, Bidding, and Timing

Questions were also asked of participating EESPs aimed at eliciting a breakdown of the types of contracts engaged in generally, and specifically with respect to the 1998 NSPC projects. Results

of these inquiries are shown in Table 7- 11 and Table 7-12. No major differences were found between the types of contracts initiated with clients under the NSPC compared to the contracts negotiated with customers as part of standard operating procedures by sponsoring firms. Generally, half of contracts are reported to be fee-for-service based, while about one-third are said to be performance based. The ratio for non-ESCO firms, however, is more heavily weighted toward fee-for-service contracts (not the small sample sizes, however), and the responses from the limited number of non-ESCOs indicate that the fee-for-service contracts are an even greater proportion of their standard business procedures. A couple of sponsors noted that they do *combined* contracts (that is, a combination of a fixed fee plus an amount based on estimated savings, or other special arrangements). EESPs were also asked to respond to a hypothesis statement that performance contracting was declining in relation to fee-for-service contracting approaches in the marketplace. Two-thirds disagreed with the statement; however, half of the non-ESCO firms agreed.

Table 7-11
Breakdown of Contract Types for NSPC and Non-SPC Projects

Project Types	EESP Self-Reported Percent of Projects by Contract Type		
	Performance-Based	Fee for Service	Other
NSPC			
All (n = 18)	33%	50%	17%
ESCO (self-classified) (n = 14)	39%	46%	14%
Non-ESCO (n=4)	13%	62%	25%
Non-NSPC			
All (n=17)	35%	53%	12%
ESCO (self-classified) (n=13)	42%	43%	15%
Non-ESCO (n=4)	15%	85%	0%

In the majority of cases, the EESPs report that they were developing the NSPC projects on a sole source basis with customer sites. Overall, about three-fourths of the projects were reported to be sole source, and one quarter were selected on the basis of a process involving two or more competitive bids between EESPs.

Table 7-12
NSPC Projects as Sole Source vs. Multiple Bid Arrangements

Projects	Sole Source NSPC	2-3 Bids	More than 3 bids
NSPC			
All (n=15)	75%	16%	9%
ESCO(self-classified, n=11)	73%	20%	7%
Non-ESCO (n=3)	83%	0%	17%

Several additional questions were added part way through the survey (after pre-testing) that asked if the contracts were “turnkey” (with equipment costs passing through the sponsor’s books), and whether the performance contracts allowed for payments for partial savings. Four out of the five answering the question about partial savings (and indicating that the question was relevant to them)

indicated that partial savings were paid. Six of the nine sponsors responding to the turnkey question indicated that the equipment costs were passed through their books 90% to 100% of the time; two other respondents indicated that they did not pass the equipment costs through their books at all; the final respondent said they construct their projects as turnkey 30% of the time.

Handling of Incentives and Expected Margins

To better understand how incentives were handled between EESP sponsors and their customers, the following question was asked of the EESPs sampled:

“For NRSPC projects in which you are a sponsor, what proportion, if any, of program incentives did you pass through to the customer to reduce incremental measure costs as opposed to applying them to offset your own marketing, project development, and M&V costs?”

Note, first, that this question is admittedly an abstraction. Although the incentives can change the equilibrium in the marketplace at which buyers and sellers settle on a market price for particular energy-efficiency products and services, “where” the incentives are applied in the complex accounting process is virtually immaterial. The issue is mostly one of perception and communication, that is, how did EESPs position the incentives in their dealings with customers.

As shown in Table 7-13, EESPs reported that the majority of the incentives from the program are being passed back⁷ to the customer. Overall, the EESP sponsors report that they intend to pass back about 90% of the incentive to the customers. Half reported they will be passing 100% of the incentives back to the customers. Another half report that they will be passing back between 70% and 85%. One reported returning 100%, but noted that perhaps 30-60% of the incentive would be taken up in offsetting operating costs. The overall percentages were nearly identical between ESCO and non-ESCO interviewees.

Table 7-13
Proportion of NSPC Incentives Expected to be *Passed Back* to Customers

Share of Incentive to be Returned to Customers	Number	Percent of Responses
100%	9	50%
90%-99%	1	6%
80%-89%	5	28%
70%-79%	3	16%
Total	18	100%
Average		89%

Respondents said that the remainder of the incentives were being used to offset other operating costs including M&V, administration, project development, and other costs.

⁷ The term “passed back” to customers may refer to several different situations. In some cases, the incentive payments may be directly forwarded to the customer; in other cases, the sponsor may be quoting prices net of incentives.

With respect to expected margins from the NSPC projects, almost two-thirds of respondents said that they expected no change in margins for the NSPC projects compared to other projects. Four of the 13 responding (29%) said that they expected higher margins, but most indicated that these would be modest changes. The only one citing a figure said they hoped that they would be 10% higher. The one respondent noting they expected a lower margin indicated they thought they might get no margin, citing added costs associated with the program's paperwork and overhead. The following reasons were given for those expecting no change in margins:

- Performance contracting is their business already, and they are already set up for this type of work, therefore the program should lead to no change in their cost structure.
- Margins can not be increased because others are passing the incentives to customers and other sponsors need to “match” the competition.
- The sponsor bid the project independent of the incentives.

Time Required to Get Complete Customer Sale

Respondents were asked how, if at all, the program affected the time it takes to get customers to commit to energy-efficiency projects. The majority of respondents noted that the program seemed to lead to an increase in the time it took to get customers to say “yes” to projects (over 60%). One quarter felt the project led customers to say “yes” more quickly, and the remainder felt that the program did not affect the time it took to get customer agreement.

Those who felt it took more time indicated that it took more time than traditional rebate or incentive programs, which were simpler. In this sense, the respondents' internalized an alternative program as the base case for their answer, rather than a lack of any program or incentive intervention at all. Most respondents who indicated the program did reduce the amount of time it took to get customer approval did not offer any clear explanations of how it did so. One respondent who said there was no difference noted that end users are slow to commit with or without the program.

7.2.4 Participant EESP Perspectives on the Market for Energy-Efficiency

Challenges in Marketing Energy Efficiency

Respondents were asked to characterize the top challenges that their companies faced with respect to gaining customer acceptance of energy-efficiency projects. According to respondents, the biggest challenge to getting customers to accept projects is meeting financial criteria (ROI, paybacks, etc.). Credibility was mentioned second most often - that is, customers' lack of familiarity with or credibility toward the firms marketing energy efficiency to them. Technical aspects of projects and internal budgeting and approval processes were the third biggest challenges mentioned. A wide variety of other items were mentioned, from managing changes in technology, to deregulation leading customers to think energy will be cheaper, to efficiency “not being an emotional sell.” There were few differences by the type of end user business other than

that respondents reported that some customers had more layers of management to work through (leased office); owner occupied sites had more of a first cost focus; decision-making in retail and institutional settings was complicated; and competing priorities are more difficult to navigate in industrial situations.

Deregulation and Interest in Efficiency

When asked what effect deregulation of electric commodity may be having on end users' efficiency-related decisions, there was a general but not consistently strong belief it has led to delays in customers' decision making. On the other hand, some respondents felt that the deregulation process had increased end users' general awareness levels with respect to energy issues and that this led to some increased attention to energy efficiency opportunities. Specifically, 40 percent believe that deregulation has led customers to delay efficiency investments; an equal number think no change has resulted. Very few (15%), however, believe that *interest* in efficiency is less than two years ago; fewer still believe end user interest will be lower two years from now. However, one respondent noted that interest will probably fall off three years from now when the CTCs are paid off.

Marketing Approaches

Respondents were asked to characterize the major "selling points" they use when approaching customers about energy efficiency investments. The resulting categories are summarized below:

- Financial merits, including positive cash flow, life cycle savings, payback, lower cost, cost reduction, cash savings. This was the most common set of answers, mentioned by over three-fourths of respondents.
- Energy savings or reduced bills: this was mentioned explicitly (not just assumed as part of cash flow) by a quarter of responding firms.
- NSPC program features, noting that the money would go away, that significant incentives were available to discount the cost of the project. In addition, some respondents reported using the program concept to educate customers on the concept of performance contracting (about one quarter of firms).
- Quality issues, including equipment quality and long-term performance agreements. Two firms total (one sixth) mentioned these issues.
- Reliability/safety/production issues, including higher reliability, automation improvements, production improvements, safety for product. These issues were mentioned by two respondents (one-sixth).
- M&V also was mentioned by one firm, identifying it not just as an incentive, but that the firm knows the business and that the M&V helps demonstrate lifecycle costs.

Other than those dealing with specific NSPC program issues, firms reported that the selling points were generally the same those they normally use.

Impact of NSPC on the Marketplace

When asked whether the NSPC had resulted in any changes to their *marketing, advertising, branding, financing, or other business strategies*, the vast majority of respondents replied that it had not. Some mentioned they had historically been set up to do performance contracting projects so the program complemented their approach but did not alter it; others noted that the program was too new or they weren't sure how long term it would be for them to make changes in approach. Several mentioned that the incentives and credibility effect aided their sales activities.

When asked more broadly what impacts respondents saw the NSPC as having in the marketplace, the majority of comments were positive (for the 11 of 17 who had comments on this topic). These comments were that the program would: lead to increased interest by customers in energy efficiency; transform markets or accelerate the agenda for transformation; and capture some or all of the opportunities to reduce demand (mentioned in some form by five of the firms). One firm commented that the program appeared to have achieved a goal of attracting participants and stimulating third party ESCO participation. Another caveated their positive comments about market transformation potential by adding "if the process is streamlined." One ESCO felt that the focus is too much on energy *savings* rather than on *efficiency*. One also reserved comment because, in their opinion, the program provided only limited funding in comparison to what the respondent thought would be required to transform the market.

Some comments, mostly from the non-ESCOs were, on balance, more negative. They included the following:

- The program encourages cream-skimming, discourages energy efficiency, and "employs bureaucrats" (one respondent).
- The program leads to problems because of the delays in projects, and as a result, some customers are negatively impacted because they would have implemented measures more quickly and realized savings and cash flow benefits on a more accelerated schedule without the program.

In response to another probe on the effect of the program on their business development, the majority reported that it "helped a little"; it could have helped more if the program had not run out of funds; and some of them picked up new projects. Some responded that the program either "hasn't helped" or "helped minutely." One respondent said that it clearly helped the financial angle of sales tremendously. Another reported it helped because they added M&V consulting to their service line in response to customer needs related to this program. When asked about changes that the NSPC led to in types of services offered, target markets approached, or marketing methods, the results in terms of these specifics were generally that it had "no impact" with rare exceptions (a couple noted that it provided an excuse to talk with some customers; one said that they had adjusted a brochure).

Limitations to Growth

Project applicants were asked about the primary factors limiting their company's growth. A wide variety of responses were given as limiting factors, including:

- getting good people (30%)
- capital constraints (20%)
- getting customers' attention (25%)
- length of project cycle (i.e., time it takes to get a project signed) (20%)
- new competition from utility affiliates with highly recognized brand names (20%)
- the decline of rebates, "lack of sales," and customers' unwillingness to do projects because they are waiting to see if energy prices drop through deregulation were other limiting factors mentioned

When asked for estimates of the "size of the California market for efficiency," most respondents declined to answer, noting that they generally did not have any idea. For those responding, estimates ranged from \$50 million for one sector to "billions."

Viability of Firms Post-NSPC

After the survey pretest, a question was added that asked respondents to discuss their views on the viability of their energy-efficiency related business after NSPC-funding stops. This question, elicited a few responses. Three sponsors explicitly noted that performance contracting work is their business, and has been their business for some time, and they anticipate remaining in the field into the future. One non-ESCO noted that they were establishing partnerships with ESCOs for joint business development; another said they were activity promoting integrated O&M and efficiency, not just conservation.

Only two firms that offered bundled commodity services responded to a question asking whether efficiency services are important compared to power quality, rate negotiation, billing and a wide range of other services. Both reported that, in their opinion, efficiency is not an important feature of successful commodity deals.

7.3 RE-INTERVIEWED PARTICIPANT EESP RESULTS

To provide updated feedback on the experience of participants with the program, re-interviews were conducted with 14 of the 22 participants that had been interviewed earlier in the evaluation. Information was gathered on the progress of their applications and projects, their experience with the program to date, comments on PY99 program changes, changes in business practices, and perceptions of impacts of the NSPC program. The re-interviews included a variety of EESP applicants - large and small, ESCO and engineering firms, and applicants whose projects were at a variety of stages in the program.

Feedback on the program is not easily categorized. A significant share of interviewees were favorable about the program, another share were negative regarding their experience, and a few expressed mixed impressions of the program. This section is organized into the following sections:

- PY98 Project Status and Summary
- Comments about PY98 Changes and Likelihood of Participating
- Changes in Business Conditions and Practices

7.3.1 PY98 Project Status and Summary

The status of the projects of participant EESPs re-interviewed are shown in Table 7-14. More than half of the projects covered were in pre-BPA status or had been canceled. Two of the projects discussed had reached payment stage. A number of projects had been canceled, had fallen apart waiting, or are on hold by clients. Virtually all of the projects include lighting and many were lighting only. HVAC measures were included in about one-third of the projects discussed with the re-interviewed participants.

**Table 7-14
Re-Interviewed Participant Characteristics**

Characteristic	Approximate No. of Projects
<i>Utility</i>	
PG&E	8
SCE	15
SDG&E	4
<i>Project Status</i>	
Canceled-determined not eligible	7
Let die on wait list	3
Fell apart waiting	2
Client holding	1
Just off wait list	3
DPA submitted/waiting inspection	3
DPA submitted, haven't heard	3
DPA submitted and approved	2
Installation proceeding	1
Awaiting completion/installation reports	5
Paid	2
<i>Type of Measure</i>	
Lighting	32
Motors/pumps	2
EMS/HVAC	10
Boiler/economizer	2
<i>Firm Type</i>	
ESCO	8
Engineering/consulting	11

The participants were asked for their comments about the various stages of participating in the program. The overall impressions of the interviewees are summarized in Table 7-15. Generally:

- one-third of respondents had favorable impressions of the program,
- one third had negative or strongly negative feelings, and
- one third had mixed comments.

Table 7-15
Re-Interviewed Participant General Program Impressions and Comments

Impression of program (PY98)	Key Comments	Likelihood of participating in PY99
Negative	DPA was ugly - very time consuming. NSPC had no effect on business	Not likely
Mixed	Turnaround times were bad. NSPC had no effect on business	Depends, maybe
Mixed	Paperwork was onerous - would prefer stipulated savings	Depends, maybe
Favorable	Good to have a success story. M&V adopted in some other areas	Yes, probably
Favorable	M&V protocol has brought industry to a more sophisticated level	Yes, probably
Favorable	Has built their business model around the NSPC	Yes, probably
Favorable	Fairly far along, waiting over time limit for DPA review, program is getting firms involved, significant business from NSPC	Yes, probably
Favorable	Fairly far along, relatively smooth process, developing future projects, program needs to be on-going, not start/ stop	Yes, probably
Mixed	Fairly far along, M&V too complex, need to reduce paperwork, increased business	Yes, probably
Mixed	Forms too complex, confusing; too much monitoring - disruptive to customer, new M&V skills developed; need faster paperwork review	Unknown
Negative	Wait-listed for a year, program wasting lots of money, M&V overly complex, some PY99 changes positive	Yes, probably
Strongly negative	Program is only designed to help ESCOs (and consultants) and does not help efficiency. Didn't learn from bad track record in NJ. Shouldn't M&V lighting, Program has given conservation a bad name	Depends, unlikely
Strongly negative	"Hates" program, not customer friendly. Utilities holding up DPAs too long, M&V too much for lighting, issues with competence of reviewers	Depends on changes
Mixed to negative	Program is confusing, onerous. Beneficiaries are utilities and consultants, not customers. Lag time issues	Yes, probably

Interestingly, the majority expect that they will look to participate in PY99, depending on potential program changes.

How the PY98 Program Is Working

From the perspective of the participants, there were both positive and negative aspects of the PY98 program and about how well the program was working. The positive comments included:

- One participant complimented the one-week turnaround they received on the review of their BPA by one of the administrators.
- The forms were relatively straightforward if there was only one measure throughout the facility.
- Reducing the cap was a good move (although they stated they would have preferred the change to have been made even earlier).
- Strengths of the program included getting (non-utility) companies involved, helping customers, and generating leads.
- The incentives are helpful.

Negative comments included:

- Two participants specifically noted that the utility review for the DPAs were significantly beyond the expected 45 days.
- The two year time frame is too long - clients need money more quickly.
- Rebates were better and got more done. This program is designed to assist the ESCOs, not other firms providing assistance to customers.
- M&V was raised as an issue repeatedly.
- The program is not customer friendly.
- The program has approved very few projects.
- The program is too slow - projects were on the wait list for a year.

Other overall issues about the PY98 program that were raised included:

- Continuity in the program (with minimal changes in the future) was highlighted as being very important for both customers and EESPs. Having worked through the process (including M&V, paperwork, etc.) and having repetition in this area will make everything go faster the next time.

- One EESP noted that they had to turn down funding from the wait list because the project had already gone forward with construction. This EESP noted that it is extremely difficult to stall projects with customers.
- It was suggested that the CBEE expand the program funding available rather than restricting the amount of money available.
- The word on the street is that the NSPC program has “done a little for the customer, and a lot for the M&V consultants.”
- Concern was expressed about what will happen to the efficiency side of the EESP business when the CTC goes away and new price structures are announced. It was felt that the CBEE will need to re-visit the incentive structures at that time.
- Chain accounts with multiple sites have an inherent difficulty participating in the NSPC program. Scheduling inspections and installations have to be coordinated within a variety of time constraints.
- One EESP felt that the incentives have worked in many instances to make projects affordable. It was felt that many of their projects would have been a difficult sell without incentives.
- Clients know that NSPC is available but they don't really understand the costs involved.
- One EESP shared the impression that lighting may be discontinued after this year and, as a result, they are encouraging customers to undertaken lighting projects this year while incentives are available.

In at least one case, the program has helped encourage a niche market. One participant has managed the paperwork burden by hiring a subcontractor to keep informed about the program and to fill out the forms for them. This firm had assisted the participant in paperwork for previous rebate and other programs, and using the supporting firm has allowed the participant to focus on the technical aspects of the project. The participant noted that their costs and hassles are kept under control in this way, leaving paperwork to a firm that knows how to fill it out. The arrangement has left the participant with a favorable impression of the program. It may be that some of the EESPs were engaged for some of the same expertise.

DPA and Paperwork Issues

Comments on the paperwork for the program focused on the DPA review time. Several participants noted that the utilities had not reviewed paperwork in the time allotted, and that this practice led to participants spending up to a year on the wait list. Given the initial time limits, the original applications should have cleared (been accepted or rejected) in a much shorter timeframe. Participants had strong feelings about the complexity of the layout of the DPAs - particularly that the forms were not well designed for lighting measures. Two firms that did not complain about paperwork included one that had another firm complete the forms, and another that had exactly the same measure throughout the facility. Some did not care for the designation of Title 24 as the standard, stating that it didn't reflect reality. Others that had just gotten off the wait list had yet to complete these forms and had no immediate comment. Additional comments follow.

- One EESP noted that the fact that it has taken so long to complete the DPA process has made customer relations difficult. Customers ask where the project is in the process, but the EESP doesn't know. The general impression is that the DPA process takes too long.
- For lighting measures the DPA process was characterized as extremely simple. For the mechanical measures, the process was seen as more complex: a few obstacles, in that the structure of the format of the DPA was made for “canned measures” and, if your measure does not fit, then you have to have to adapt.
- One EESP was particularly disgruntled about their experiences in the NSPC program. This respondent characterized the DPA in extremely harsh and agitated terms. This participant noted that if the program is available for PY99 they will not be participating, considering it “a waste time.” Perhaps even more telling, this firm is putting together projects without even mentioning the program to customers. When customers ask about NSPC incentives, the firm recommends against them.
- From the perspective of several customers, there was/is a lot of trial and error in processing DPAs. They felt that they were given no direction in terms of how to get their DPAs up to par and that the prevailing attitude was that they were supposed to just keep re-submitting their application until it worked. A single DPA was reportedly resubmitted over a dozen times.
- One EESP suggested that there should be statewide criteria for the review of DPAs and BPAs.
- Another customer felt that while the DPA is OK in theory, there is a tremendous burden in actually doing it.
- Since NSPC is not a rebate program, a tremendous amount of administrative burden is placed upon the participant. A lot of paperwork is required, especially when sites are geographically spread out.

Monitoring and Verification

Questions about M&V brought out the strongest comments from participants - the majority of which were negative. On the positive side, one respondent suggested that the M&V was not very dissimilar to M&V the firm typically used. They stated that the two year M&V was a plus and that the measure savings numbers would be useful in contracting and as client references in the future. Comments summarizing issues regarding PY98 M&V follow.

- The M&V is considered too complex by the majority of the respondents. One characterized the balance in the program as backwards, saying “the M&V *is* the project.”
- The expense of the M&V was mentioned by several respondents. One angrily stated the required M&V “blows project costs.” Another stated the M&V was too high in relation to the value of the projects. In another case, a customer noted that the M&V required many sites with monitoring for a two year period. It was expensive, although they had found a way to save some M&V costs by borrowing appropriate metering equipment from the utility. Another noted that monitoring equipment could be rented.

- M&V procedures for lighting was mentioned by several respondents. Simplifications for lighting measures were recommended by these respondents. Two mentioned that the lighting M&V should be simpler than that required for HVAC - that only watts, number of fixtures, and operating hours were really needed to estimate savings, and that lighting savings tended to exceed estimates.
- One respondent suggested “allowing Option D” for M&V, and another stated that using Title 24 as the baseline was not realistic.
- Finally, two participants noted that having the consultants review and approve the M&V plan was a problem. One noted that the consulting engineer could have a difference of opinion about an appropriate M&V plan, and although there could be nothing “wrong” with the M&V plan proposed by the project engineer, the consultants could choose to disapprove the plan.

Comments about the Technical Consultants

Technical consultants are used by two administrators to review the paperwork and conduct inspections. Half of the respondents had comments about the consultants and their involvement in the process.

- One was concerned about the delays in review by the consultants.
- One participant had strong concerns about the qualifications of the on-site inspectors. The participant felt that the inspector did not understand the equipment, and was concerned about the basic level of the questions asked by the consultants.
- One respondent was concerned that maintaining program complexity was in the consultant’s best interest. One made a comment that the incentives to the consultants are not necessarily to resolve the project documents efficiently. In particular, they were also concerned about the incentive for the consultant to conduct multiple on-site visits because they benefit financially.
- One firm felt that they had learned the consultants “quirks” and what they were looking for, and that they expected their paperwork would go more smoothly next time.

Information Sources

The participants were asked how they were keeping up on information about the program. Responses included, in decreasing order of frequency:

- e-mail lists and/or the web sites,
- utility administrator calls or calls to the administrators, and
- sporadic TAC meetings.

The web sites were commonly cited as a source. One respondent noted that they were not sure where to look, and relied on the administrator. Another respondent noted that they use the

information to target new customers and to inform the ones they are working with about the program.

It was suggested that the administrators should update their web sites more often. During one interview, the EESP looked up a particular administrator web site and found information on training to be undertaken in 1998 and saw that their projects were still showing as being on the wait list even though they had been removed from that list.

7.3.2 Comments About PY99 Changes and Likelihood of Participating

The NPSC Program has undergone several changes for PY99. These changes include: changes in incentive levels (pricing); revisions in the BPA, revised DPA submittal schedule, revised project funding caps, changes in the M&V process, and the introduction of the small business program. Respondents were surveyed to obtain their responses to these changes and how they might impact their decisions regarding program participation,

Items that EESPs noted as important changes in PY99 are listed below:

- Lowering incentives (negative)
- Simplifying M&V would be positive
- Lowering the cap (positive)
- Getting paperwork flowing more quickly (positive, if it works)
- Site visit is a positive change
- Lowering the baseline wattages for lighting (negative)

In response to a question about whether the changes will help or hinder their participation in the Program, most said that the lower prices would hinder their participation. One said that with the changes the PY99 Program would be considered about the same as last year's Program. One said that they hadn't had enough time to review the changes to make a judgment. One wanted limits on motors eased, and another thought that the program changes were all fairly negative. Positive feedback on the changes included compliments on the larger budget and the introduction of the small program.

Prices

Several issues came up regarding the pricing changes. As expected, most preferred the higher prices offered in PY98. Although most noted that the changes would make the "sell" harder, none indicated that it would be a deal killer.

There were several comments to the effect that the relative levels of prices should also reflect the level of effort involved in M&V for the measures. Decreases in prices for lighting were more acceptable if M&V burdens decreased. However, several noted the significant decreases in VSDs and other measures that not only had a price decrease but a shift to a lower-paying category (e.g., EMS and VSDs from HVAC to "other," halving the incentive). Under lower prices, measures that are more expensive for M&V (or with more M&V uncertainties) may be avoided. One potential consequence noted by several (including a large ESCO) was that lower prices, in combination

with the reduced caps, may serve to further reduce the variation and innovation in measures installed under the program.

Comments on these and associated issues follow:

- If the lighting price decrease comes with a reduction in M&V then that makes it more acceptable.
- The lighting changes include not only lower prices, but also a change to the baseline. The baseline change is a problem (the baseline watts were reportedly lowered from 40 watts to 34 watts for some measures, decreasing the savings from changes).
- Fixed incentives are easier to deal with, and these price changes won't help with the onerous M&V. For lighting in particular, the M&V should just check whether the equipment is in place.
- Lower prices changes the program from "lots of money, let's do it", to something better than nothing, but now the project has to be solvent without the incentives because of the cost of participation.
- The change is very bad - at lower prices, the EESP won't be able to recover costs, because the investment to get into the program is very high.
- Asked whether the incentive was required to enable a project to go forward, it was felt that in many cases it was necessary, but that in school districts the incentive is definitely the "icing on the cake" as many of the projects would have gone forward on their own merit.
- One EESP doesn't think that there will be a rush for incentives this year (as was seen last year), in large part due to the function of the requirement that an audit and preliminary M&V plan be completed as part of the BPA process.
- Under the PY99 modifications, ASDs are treated as "other" even if they are installed on HVAC. Although the participant understands, this is not how they would prefer it. M&V can be expensive.
- Concerns were expressed regarding the lower incentive for "other" measures and that the new incentives may not cover the M&V costs. This is especially the case if, for example, ASDs are installed as part of an HVAC upgrade.
- Without the high prices (23 cents was viewed as being ". . . way too lucrative for refrigeration"), it was felt that the NSPC program may not need caps.

BPA Revisions

A little more than half of the participants felt that the addition of the audit to the BPA was a positive move. Several were already doing it, or felt it was pretty important to the project design, or believed it had to be done anyway, so why not here. Concerns included questions about who would pay for the audit (and whether any for-profit firm would make this investment before commitments), and concerns about whether this would reduce overall paperwork or not.

Adding information on the M&V plan was considered a good change by a couple of participants who stated they would like to hear right away if M&V was going to be a problem. Concerns about BPA changes included:

- Requesting the ownership names of firms will not help because people will get around the limits anyway.
- Adding audits is a good step, but the audits should not be allowed to be the ones given for free to large customers by the utilities. That makes an uneven playing field, in that smaller firms have to pay for the audits, and it doesn't encourage audits by private industry for important firms.
- Adding requirements to the BPA increases up front costs and increases the cost of "exploring" for conservation - so less conservation will happen.
- The respondents prefer simpler program requirements, not more complexities.

DPA Submittal Schedule

Shortening the DPA submittal schedule was not considered a problem by those focusing on lighting, but there was somewhat more concern from those installing mechanical measures. Several, however, stated they were more worried about utilities holding the DPAs than submittal times. Some stated that they had the information ready up-front anyway; several others highlighted the importance of getting the projects out there as quickly as possible. One hesitated because of the potential impact on workloads for small businesses, but most thought the changes still allowed enough time. Other comments included:

- One EESP expressed concern that the utilities want to look good, but that they don't like the program and don't really want to implement the program. It was recommended that the CBEE should take the utility response dates and turn them into milestones.
- The revised/shortened time frames are fine for lighting, but may be problematic for mechanical projects in which greater time is required for engineering work and baseline metering.
- More concrete expectations in terms of turnaround time on the part of the administrators were recommended. It was also suggested that sixty days should be the longest period of time once something has been submitted. And six months *total* was judged to be appropriate for completing a project.
- It was suggested that the NSPC program develop some means for "fast tracking" the approval process.

Project Funding Caps

There was also very strong support for the lower funding caps. The perception that three big firms could come in and grab all the money, and that lower caps raise the possibility of increasing fairness and encouraging more projects. Some of the respondents didn't deal with large customers, so they saw little impact. One was unsure of the impacts because they hadn't had time to review the program changes, and another thought that the rules would be able to be thwarted

anyway. Finally, one felt that the lowered prices would help solve the over-subscription problem without the new caps, but there was concern that the combination may also lead to less diversity in measures as firms try to maximize what they get for the incentives.

M&V Revisions

Two key points were brought up by participants regarding M&V revisions. First, lower prices should mean lower M&V, and second, that M&V for lighting should be significantly simplified - perhaps to the level of no M&V, stipulated M&V, or use of forms similar to the “Express” program forms. Several resented having to “please the consultants”, noting that there may be differences in opinion about measurement strategies and multiple approaches may be valid. The manner in which lighting measures are required to be grouped on the forms was reported to lead to significant extra work. Grouping lighting by the breaker -- rather than by fixtures, operating hours, or other simpler methods -- was criticized, and some noted that they had to fill out over 200 lines of forms for lights that were all on all the time. They felt that a couple of checks for operating hours over a couple of months should really suffice for lighting measures. Sampling was another issue, and many respondents felt that too many points were required to get buy off on the M&V. “Too much detail” last year was a common complaint. Other comments about M&V are listed below.

- One EESP feels that the M&V requirements are reasonable, and views this as a positive program element because their firm wants to encourage good measurement.
- Now that they can do M&V, one firm has incorporated their experiences into out-of-state projects. One benefit of this and previous bidding programs is that this company has had an opportunity to stock the necessary equipment and minimize future M&V costs while using the M&V capability as a sales tool with risk-averse customers.
- One EESP in particular would prefer a stipulated savings program.
- An EESP expressed the opinion that the NSPC M&V is going to have a real impact upon the industry in terms of specifying M&V criteria that conform to a third party review. It was noted that there are a lot of unethical practices that occur in the ESCO industry and that this will help to minimize those practices.
- With respect to M&V requirements, this EESP felt that the program requires that they effectively monitor 50% of all lights in all facilities. It was also mentioned that their firm was required to monitor lights at a school during summer months that the school was unoccupied in order to prove the summer baseline for lighting use. PY99 changes in incentive amounts were not felt to help matters since the cost of M&V experienced was too high to warrant the effort.
- In the future, one EESP will do an analysis of the tradeoffs in terms of administrative costs associated with doing particular measures. M&V costs are high for refrigeration, and low for lighting.
- It was noted by one respondent that EESPs will ultimately be the beneficiary of M&V results, particularly as they provide baseline information and documented savings for customers.

Small Program

About half the respondents hadn't heard about the introduction of the small program. Comments from the others were mixed. Some thought the concept was good, and that smaller firms pay the PGC funds and deserved a program; others were not sure if it would work. Some had reviewed the program and felt that it didn't look simpler than the larger program. They also objected to the restriction that customers couldn't be their own sponsors, and thought it looked like another benefit strictly for the ESCOs. One stated that the program was probably important politically, but didn't expect it to change the industry.

Likelihood of Participation in PY99 Program

When asked about activities underway for the PY99 program, half had fairly concrete plans for projects. These included efforts in gas measures, lighting, HVAC, economizers, motors and pumps, and other measures. Some had plans to aggregate smaller businesses to participate in the program. Several wanted to reserve judgment about participation until they had a better chance to review the forms, requirements, and program changes. Several firms emphasized that they want to get through the first project to see if it is worthwhile for them to undertake additional projects under the NSPC program - there is a "wait and see" attitude among a number of the participants interviewed. Thus far, it was noted that the program "seems too bureaucratic to make sense." Some with fairly negative comments about the program overall stated they didn't expect to participate unless the program became more user friendly. Regardless of caveats, it appears that the program's funding is still an attractive addition to projects.

7.3.3 Changes in Business Conditions and Practices

The participants were asked a number of questions about changes in the business environment and in their business practices since the first round of interviews in the Fall. Responses to these inquiries are summarized in the following bullets:

- ***Changes in Business.*** Responses to questions asking whether any changes in the firm's energy efficiency business had occurred led to a variety of responses. Two firms indicated that there had been no significant changes since the last round of interviews. Two noted that their firms were very large and/or were based outside California, and there had been no significant changes the firm felt were significant. Three said sales had increased or that they were growing or hiring, with one indicating that they were learning to be more aggressive in the marketplace. One mentioned that each time they went out to market they were trying to connect with larger firms or larger jobs, because the marketing costs appeared to be about the same, regardless of the size of the project. Finally, a firm indicated that the money out there seemed to be lower than the levels that they saw during the heydays of the rebate programs.
- ***New Marketing and Practices.*** Three firms stated that there had been few to no changes in their marketing. However, a couple noted they had made small changes or constantly evolved over time. One is trying an approach where they put two full time people marketing out in the field and hope to see increases in business from this approach. Another has broadened the classes of usage that they consider target customers for their services. One notes that the trend in a few companies is to teach engineers to be more "solution oriented" - talking further up the management chain (to owners) and thinking more broadly about integrated solutions and

becoming broader problem solvers for owners. One in particular said that their entire business niche was to adapt quickly to meet the specific needs of each individual customer. They were small enough to move quickly to supply whatever might be needed by the customer. Others preferred not to be specific about changes they were making.

- ***New Products.*** In terms of new products and services, a couple of firms had merged or allied with firms that would help expand their service line. One now added power service, another added more hardware and new “hooks” for selling the hardware, another expected to add sensors, guarantees, and monitoring expertise, and another added thermal expertise. All insisted that the NSPC had no role in these expansions, but these were responses to the larger market or ongoing evolution. One respondent noted that the NSPC had not spurred the changes because the NSPC was too uncertain.
- ***Business Practices.*** As far as whether the NSPC affected business practices, most indicated that the NSPC was a small part of their business, and had not had an effect. Three mentioned M&V in response to this question - one determined to hire out the M&V work, one did not previously do M&V and still has not added it for non-NSPC projects, and the third said they had used more stringent M&V for a previous program (Power Savings Partners) and that the NSPC’s M&V was similar to what their firm generally used. Two were critical of the program, one saying that no effect could be expected because no projects were going forward; another said that the complexities and problems with the NSPC had given conservation a bad name to the engineers in his firm and he was having a hard time getting efficiency projects through.
- ***Mergers and Alliances.*** A significant number of participating firms had experienced mergers or undertaken strategic alliances recently. Some were project-by-project alliances, but more were longer term and more formal. Four allied with firms that broadened their technical capabilities and services, and one was working formally with municipal agencies. A number of informal alliances had also been established. One cited alliances with ESCOs on a project-by-project basis, and another was working on a project jointly with a very large ESCO on an exploratory basis.
- ***Competitive Changes.*** The majority stated that the competitive environment and the competition hadn’t really changed. Several stated it seemed to be the same people, just sometimes working for different companies. One noted the influx of larger firms (the “Enrons”) over the last couple of years, and others noted the utility affiliates as newer players. One felt that there were some large players that had come into the marketplace and were “buying” projects and causing disruption. Another felt that changes were happening because everyone was taking advantage of the confusion introduced in the market because of deregulation, and that many firms were talking to owners about services well outside their traditional areas of expertise. One firm felt that there was less competition out there - that more recently the “little folks operating out of garages” had been leaving the market. Other comments about the competitive situation included:
 - ⇒ One EESP has seen increasing competition from ESCOs in the area of facility management.
 - ⇒ For one EESP, the market is seen to be flooded with construction projects - including capital improvements and deferred maintenance projects. The economy is very good right now in California and more and more (public and private) deferred maintenance projects

are coming into play. From this person's perspective, these types of projects present an ideal time to upgrade efficiency.

⇒ According to one EESP competition has been "heating up" as firms incur serious losses on the commodity side of their business and these firms try to find profitable energy-related business areas. It was felt that there may be too much competition and, especially as related to the issue of CTC costs and declining energy costs, customers may not care.

- ***Role of Electric Commodity.*** Three of the interviewed firms sell electric commodity. In one case, one of these firms reported that they had approached a firm about direct access and ended up developing a lighting project. However, this firm felt that "integrated" service was overrated in terms of marketing potential.
- ***Effects on M&V Capabilities.*** The NSPC led to in-house M&V in the majority of cases, many with newly enhanced capabilities to serve the program. Some noted that if many new projects come through, they might need to subcontract some of the M&V. Another noted they planned to subcontract M&V regardless. Some noted these were "new skills." One noted, however, that this was more than they ever wanted to know about energy use. One noted that their M&V focus had been evolving away from billing analysis to more measure specific monitoring, but that this was not in response to the NSPC.
- ***Other Impacts of NSPC.*** The majority stated that no additional business leads or prospects had come from their participation in the NSPC. Of the minority, one said the utility had forwarded a lead, another stated they had gotten prospects, and another said they had significant success in generating leads from their participation. Half stated that the NSPC has had a positive effect on their business - or at least in the California branch of the business for nationwide firms. One noted that the NSPC helps keep their office on the national firm's "radar screen." Several saw significant increases, another said that it helped somewhat, and another noted that it "helped, but it doesn't make the project a go." One EESP noted that the NSPC program experience helps them get "in the door" with new customers. This particular EESP has identified a marketing theme in which they highlight that they can "help firms with [energy] incentive programs." One noted that there was no effect because there were few projects approved or projects were "stuck in a bureaucracy." One other felt there was a negative financial impact from participation (or attempts at participation).
- ***Performance Contracting Market.*** Virtually all respondents felt that the NSPC had not had an impact on the performance contracting market. Several specifically noted that the lack of impact resulted because the program was too small to make an impact, and because the program had taken a year to get projects going - and some were just getting started. Two felt that the market had been moving away from performance contracting toward fee for service work, but that this program had revived this form of contracts (undesirable, from their viewpoint) in service to the ESCOs, who like it. These firms felt that performance contracts were not very good for customers, and that the contracts led to high prices by the ESCOs.
- ***Administrative and M&V Costs of the NSPC.*** Reported percentages for the cost of paperwork and M&V as a percent of incentives varied from 3% to 57% of incentives. Most reported the paperwork was about half, and the M&V represented the other half of these expenditures. The incentive represented between 12% to 70% of total project costs. While

one EESP was hesitant to cite a particular portion of the incentive that goes to M&V, it was suggested that amount has been lower than expected.

7.4 NON-PARTICIPANT EESP INTERVIEW RESULTS

Interviews were conducted to obtain input from a sample of firms that had not participated in the NSPC program in 1998 (non-participant EESPs). The primary objectives of this task were to (1) characterize the business activities and strategies of these firms for comparison with those firms that participated in the PY98 NSPC (Non-Residential Standard Performance Contract) program, and (2) understand why these firms were not involved with the PY98 program and assess the likelihood that these firms may participate in future years' solicitations.

In total, interviews were completed with a sample of (17) firms, including a mix of in-state EESPs, out-of-state EESPs, in-state Mechanical Engineering and Contracting, and one firm that focuses primarily on financing (including financing other ESCOs). Obviously, the scope of this effort was not to characterize in a statistical manner the entire market of non-participant EESPs. Rather, the approach taken was to interview representatives from a broad cross-section of non-participants and identify possible trends and issues within the marketplace that might provide input to complement the information obtained from customer surveys and interviews with participating EESPs.

This section is organized into the following sections:

- Types of Firms Contacted
- Characteristics of Firms Contacted
- Awareness, Understanding, and Experiences with NSPC Program
- Perceived Strengths and Weaknesses of the NSPC Program
- Perceived Trends in the Performance Contracting and Energy Services Marketplaces
- Needs and Market Barriers for Non-Residential Customers
- Preferred Roles of Actors/Agencies in Program Delivery
- EESP Recommendations for Improving the NSPC program

7.4.1 Types of Firms Contacted

As noted above, and summarized in Table 7-16, a wide variety of firms was contacted.

Table 7-16
Types of Non-Participant EESPs Contacted

Type of Firm/Description of Firm	Number of Firms
<p>Traditional ESCO</p> <ul style="list-style-type: none"> -ESCO with consulting, financing, and broad environmental capabilities, specializing in non-residential energy efficiency services. -Large, full-service ESCO -Total energy management firm with ESCO roots (treated as an ESCO in the discussions below). -ESCO serving the non-residential sector with power quality, O&M, and HVAC service expertise. -ESCO serving the residential and non-residential sectors with consulting, O&M, submetering, and lighting services to customers and other ESCOs -East-coast based traditional ESCO, with regional operations throughout the US (not presently active in California). 	6
<p>RESCO</p> <ul style="list-style-type: none"> -RESCO with a practice covering clients nationwide and in Canada -East-coast based retail energy service provider (providing commodity and efficiency) -East-coast based retail energy provider (mostly providing commodity-only, with some services out-sourced to local firms). -Non-California retail energy service provider (providing commodity, efficiency, and information services). -Full service RESCO operating across the State 	5
<p>A&E</p> <ul style="list-style-type: none"> -A&E firm specializing in non-residential planning, consulting, power quality, performance contracting, and engineering design work -Engineering firm with expertise in co-generation, substation design, power plant design, petroleum-extraction, and refining -HVAC engineering firm with energy efficiency practice primarily engaged in R&D activities -Engineering firm providing energy analysis and design services to city, state, and local government and institutional clients 	4
<p>Other</p> <ul style="list-style-type: none"> -Financial services firm, financing conservation and renewables -Non-residential HVAC contractor serving a region of the State, providing engineering consulting, O&M, performance contracting, building monitoring, and other services 	2

7.4.2 Characteristics of Firms Contacted

Information was collected to help more fully understand the types of firms contacted. Of the firms contacted, a few were long-established companies (the oldest being in 1946) while the majority were founded during the past nine years. Annual revenues for these firms ranged from a low of \$500,000 to over \$185 Million. Employment within these firms is typically either stable or growing, and a number have recently been involved in some sort of merger or acquisition activity.

Firms that were contacted were asked to characterize the geographic scope of their operations. While none reported that they were predominantly local, several of the firms are regional and/or state-wide. As shown in Table 7-17, approximately ten firms (typically the larger full-service EESPs that were contacted) characterized their scope as being national or international.

Table 7-17
Geographic Focus / Scope of Non-Participant EESPs

Geographic Focus	Number of Firms
Local	0
Regional	3
Statewide	4
National	6
International	4

Firms were also asked a series of questions regarding the types of business areas that they target, the results of which are provided in Table 7-18. Non-residential energy efficiency services are provided by all but one of the firms contracted, followed most closely by energy planning and consulting. A broad range of planning and consulting services are provided, ranging from commercial facility operations and power supply procurement to industrial plant operations and energy sales.

Table 7-18
End User Services Offered by Non-Participant EESPs

End User Service Provided	Number of Firms
Non-residential EE Services and products	16
Residential EE services and products	5
Electric Commodity (direct or with affiliate)	8
Gas Commodity	4
Energy Planning & Consulting	15
Customized billing	9
Metering services	10
Power Quality	13
Substation Development	8
O&M	8
Project financing	11
Energy performance Contracting	12
Other Primary (describe	8

In terms of services provided (summarized in Table 7-19), ten firms noted that they currently provide performance contracting services. Only one firm, however, reported that 100% of their revenue came from performance contracting; another firm reported 70%, with most others specifying either zero or less than 10 percent.

Table 7-19
Types of Activities EESPs Are Currently Engaged in by Non-Participant EESPs

Services Provided	Number of Firms
Performance contracting	10
Walk through audits	12
Total energy management	10
Investment grade audits	9
Fee-for-service installations	9
Other	4

7.4.3 Awareness and Familiarity with NSPC Program

Fewer than one half of the non-participant firms contacted characterized themselves as being “very familiar” with the NSPC program. Firms that had not heard of the program were typically located out-of-state or were not actively involved in the performance contracting business. The general levels of familiarity reported are summarized in Table 7-20.

Table 7-20
General Familiarity with NSPC Program

Level of familiarity	California-based	Non California-based
Very familiar:	8	0
Somewhat familiar	3	0
Not very familiar	1	1
Not at all familiar	1	3

As shown in Table 7-21, less than one-third of those contacted were very familiar with specific aspects of the program design.

Table 7-21
Familiarity with Various Program Aspects

Program aspect	Very familiar	Somewhat Familiar	Not at all familiar
Overall design	5	6	6
Incentive levels	5	6	6
Admin. Procedures	5	6	6
M&V Requirements	5	6	6

NSPC Program Awareness and Interest: In-State EESPs

Non-participant firms located within California (“in-state”) were more likely to have heard of the NSPC program. Those firms that are currently doing business in the California market are doing so, in large part, because of the high energy rates which, in turn, make deals attractive and easier to sell. One firm brought up the point that in the longer term, customers need to realize that energy efficiency, and not deregulation, is the best way to lower costs. Other general comments made in regard to doing business in California include:

- There is a concentration of well educated customers
- The deregulation environment made the business climate attractive for their firm
- Having the ability to “package” services with commodity sales helped make business deals attractive
- Public works contracting in the state is relatively attractive.

The following comments were made with respect to awareness and interest in the NSPC program by this group:

- Two of the five in-state ESCOs, as well as the two in-state RESCOs that were contacted noted that they were “very familiar” with the NSPC program. The remaining firms said that they were “somewhat familiar.”
- One firm definitely expects to participate in the next program; another will probably not participate because of the hassles involved. Others indicated that they would probably participate in the program if it was attractive for them to do so but emphasized that they hadn’t seen the new program yet and the past program had been too complex for them to participate. For one firm in particular, the window of time between finding out about the program and the dates for submittals was too short last year and made it difficult to participate.
- The in-state respondents that were less familiar with the program were also more likely to say they would be unlikely to participate in the new program. One firm indicated that the program did not fit with their business model, and another thought the program had no strengths for a lighting-focused firm.

NSPC Program Awareness and Interest: Out-of-State EESPs

The four out-of-state firms that were contacted were not generally familiar with the NSPC program. Key findings from interviews with these firms include the following:

- There appears to be a very limited awareness of the NSPC program among out-of-state EESPs. Only one of four firms was aware of the program. The one firm that was aware of the program was familiar in large part because the California NSPC program has recently been used as the model for a program recently implemented by NYSERDA in New York State.
- Two retail ESCOs (RESCO) that are active in the East-coast markets were surveyed to ascertain their familiarity with and intentions to participate in the California NSPC program. Neither of the two RESCOs interviewed is currently planning to enter the California market -- either on a retail level or in the delivery of energy efficiency services. These firms were not aware of the program and, since these firms are not actively planning to enter the California market, there was minimal interest in the program.
- Similarly, of the two out-of-state ESCOs that were contacted, neither is currently active in the California market and neither has near-term plans to enter the performance contracting market in California. Of these, one firm is no longer actively pursuing new performance contracting work, while the other may at some point enter the California market through a joint venture relationship with a more geographically-proximate RESCO.
- Firms operating outside the California market (including RESCOs and ESCOs) expressed intentions to focus on the geographic markets they presently serve. However, since these companies are working to develop term relationships with larger corporations, some of which will have offices in California, they leave the door open as to whether they will ultimately end up working in the California market. For this reason, one RESCO that was

not familiar with the program was interested in learning more about it even though they are not actively selling services in California.

NSPC Program Awareness and Interest: In-State Mechanical Engineering and Contracting Firms

In addition to the ESCOs and RESCOs that were contacted, a limited number of large Mechanical Engineering and Contracting firms were contacted. The following are findings from these interviews:

- One engineering firm felt that the NSPC program was generally well known within the engineering community. Specifically, utility presentations at local engineering professional meetings were credited with helping to generate awareness of the program.
- While some firms are aware of the program, it is possible that some California-based Engineering firms that have not participated in the program are not familiar with the program. At least one large firm that was contacted has actually been working to develop a niche-based energy efficiency practice area but was unaware of the program. This firm was interested in learning more about the program and, as a result of this survey, suggested that they may become a future program participant.
- The engineering firms contacted are not typically involved with performance contracting. However, these firms are interested in the program as a way of broadening their business base and building upon their existing expertise. In doing so, these firms want to be sure that they do not compromise the objectivity of the engineering services by, for example, putting their staff in a situation where their staff feel pressured to recommend specific equipment that may not ultimately be in the best interest of the customer.
- One engineering firm that was contacted is not engaged in performance contracting work but is aware of the NSPC program. The firm is engaged in R&D activities for innovative cooling technologies and plans to make use of the NSPC program in the future as appropriate. While they view the NSPC program as being most suitable for the application of "proven" technologies, they hope to take advantage of the availability of NSPC funding as their technology applications become proven and more widely acceptable. While this is an isolated instance, it nevertheless serves to highlight the possibility that the NSPC program can play a potentially-valuable role in the commercialization of technologies arising from state and privately funded R&D efforts.
- One engineering firm reported they were somewhat familiar with the previous NSPC and expected to participate in the next round. One of the difficulties they saw with the NSPC was that it was difficult to obtain a full and consistent story on aspects of the program. They noted, however, that the incentives, particularly on HVAC, were very generous.
- An HVAC contractor was not very familiar with the program, and offered only minimal comments, mainly recommending that programs with minimal bureaucracy and M&V, and clear program benefits, are necessary to get participation.
- One financing firm was very familiar with the NSPC. The firm intends to participate in future program offerings since it serves ESCOs who would likely participate. The firm

felt, however, that the program should not have had a “stipulated” option - an option in which pre-determined savings estimates can be used without separate verification. While stipulated is preferred, in general, by ESCOs and financial firms because of the reduced risk, this firm felt that the M&V was important to prove savings and that it had the advantage of eliminating arguments on whether equipment was properly installed.

Participation in Future NSPC Programs

Two-thirds of those in-state non-participants responding to the question indicated that they expected to participate in the Non-Residential SPC program in 1999. Most, however, expressed a caveat that their participation would be contingent on “if it were attractive,” or “if it were more convenient for customers.” One respondent was somewhat less certain they would participate, and voiced concerns about convenience and timing for customers. Two others suggested that they were not at all likely they’d participate. One respondent noted that the M&V and application process were too long and complicated; and another was doubtful that the State was customer-oriented enough to come up with something suitable. The percentages regarding likely participation did not show a pattern between ESCOs and other types of firms.

7.4.4 Perceived Strengths and Weaknesses of the NSPC Program

The ESCOs and RESCOs that were familiar with the program were concerned about a number of issues related to the NSPC. Three mentioned M&V concerns; three mentioned delays and concerns about bureaucracy and issues of a non-customer focus in program design. The number of times an item was mentioned - for both ESCOs/RESCO and “other” firms - is shown in Table 7-22.

**Table 7-22
Non-Participant Concerns with NSPC Program**

Concerns about NSPC (multiple responses permitted)	Number of Mentions by ESCOs/ RESCOs	Number of Mentions by “Other” Firms
M&V complexity	3	1
Delays, timing, window of opportunity issues	3	1
Bureaucracy, and not designed with customer in mind	1	1
Complicated, not simple enough; headache/hassle	2	0
Designed to serve ESCOs (rather than other firm types)	0	1
Designed to benefit small firms	1	0
Communication about program not even	0	1
Funds may not be available by time application submitted	1	0

In particular, non-participant respondents mentioned the following concerns and weaknesses about the NSPC Program:

- A large ESCO thought that the program went a long way to try to support small players in the market; however, they felt the program did not protect customers because the CBEE was not liable for customers to sue should the small firms perform poorly or go out of business.
- One firm felt that the size of the incentive is not large enough to “pitch” to clients, compared to the size of the project.
- Another firm felt the M&V period was too long - that you cannot “book” the margin over a multiyear period. They noted that the business arrangement and payment schedule would need to be different to make it financially attractive and that the period and the liability need to be more limited.
- One firm felt that the M&V procedures were “no big deal.” but were similar to requirements for FEMP projects. Another firm felt, however, that the M&V requirements, while appropriate for mechanical systems, were “crazy” for lighting. They also felt that the approval process was too long.
- Another respondent said that they would prefer the program not assist with education - that the firms would rather perform that function themselves.
- Simplification of the bureaucracy and speeding up of the application / approval process was suggested by several firms.

Strengths of the program noted by respondents included the following:

- The program provided relatively high incentives
- The program is relatively simple (with the exception of M&V) and is simpler than previous bidding program
- The planning process involved many stakeholders

Table 7-23 summarizes the key strengths and weakness of the NSPC as reported by the non-participants interviewed.

Table 7-23
Reported Strengths and Weaknesses of the 1998 NSPC

Strengths and Weaknesses (multiple responses permitted)	Number of Mentions by ESCOs/ RESCOs	Number of Mentions by Other Firms
Strengths		
None mentioned / said there were none	3	0
Well organized	1	0
Moved fast	1	0
Simpler than previous bidding programs	1	0
Many involved in planning	1	0
Standardized	1	0
Incentives / respond to signals	1	1
Simple	0	1
Provided education process/opportunity	1	0
M&V and proving/quantifying savings is a good thing	0	1
Weaknesses		
Time consuming, headache, hassle	4	0
M&V too expensive/complex"	4	0
Not well known	1	1
Turmoil about administration	1	1
Delays lost savings for customers	1	0
Poorly managed/planned, monetary scrutiny inappropriate	1	2
Long approval process	1	0
Not guaranteed money after submitting forms	1	0
Program not stable	1	0

7.4.5 Trends in Performance Contracting and the Energy Services Marketplace

A variety of insights were offered into potential trends and shifts occurring within the energy services industry:

- Perspectives on performance contracting vary considerably within the industry - while some of the non-participants continue to pursue this business area, others have discontinued this as a primary business focus.
- Two persons interviewed commented specifically on recent announcements that some firms are scaling back their performance contracting businesses. An ESCO/controls firm was mentioned in particular, along with speculation about another larger firm that may be undergoing similar restructuring. The impression is that these firms have become less comfortable with the long-term commitment associated with performance-based guarantees.

- One large EESP continues to maintain its existing performance contracting business but has moved away from this as a core business area in favor of other energy and some non-energy information-based services. This indirect approach has also resulted in fulfillment contracts to deliver energy efficiency services outside of a performance contracting context. They view this approach as a more sustainable business model than marketing performance contracting as a stand-alone service.
- Another EESP was very bullish on performance contracting and expressed the opinion that customer interest in performance contracting is growing and the key is being flexible to accommodate customer needs.
- One engineering firm perceived that there is a trend toward fee-for-service based services. In particular, it was felt that customers are becoming more familiar with many of the more common energy efficiency measures and realize that they are paying a premium for performance guarantees and monitoring and, therefore, are moving away from performance contracting as a means of saving money.
- Competition from utility affiliates (which were felt to have name recognition, information, and other advantages) was cited by one firm as the most significant impediment to expanding their energy efficiency businesses. Overall customer confusion with respect to deregulation was also cited as an impediment in East Coast markets. Specifically, it was opined that customers are having a difficult time understanding issues related to commodity pricing and choice and are simply not yet ready to focus on bundling energy commodity and services.
- One engineering firm contacted has begun to develop a relationship with an EESP with a broader scope of services and may ultimately become more closely involved with the actual delivery / installation of bundled energy efficiency services. At least one East Coast based EESP is pursuing a similar approach to augment in-house capabilities.
- There was no consistency in responses to questions about the expected effects of the NSPC program in the market. Four respondents expected little effect; one expected it would slow things down; two suggested it might have positive near term effects; and one suggested that the programs had potential, if implemented well. Some respondents were skeptical about longer term effects.
- Similarly, there was no real consensus on the effect of deregulation upon the market for energy efficiency services. According to half of the respondents, deregulation has led to confusion and uncertainty, as well as to delays in decision-making because of people waiting for rate decreases. One felt that deregulation would lead to ESCOs becoming a bigger factor in the market (a non-ESCO opinion); an ESCO responded that they thought that in California it has led to utilities using issues such as power quality to enter into long term agreements with customers to “tie them up.”

7.4.6 Needs and Market Issues for Non-Residential Customers

Respondents were asked to discuss what barriers or problems they believed may be inhibiting customers investments in energy efficiency. These perspectives are reported below:

- At a general level, a number of the firms stated that customers do not purchase energy efficiency, rather, they purchase other services that the equipment provides, and one firm called efficiency a “financing method” to help achieve positive cash flow.
- As is typical in these types of interviews, respondents indicated that customers require extremely fast paybacks or high return-on-investment levels to proceed with efficiency-related capital outlays. Respondents indicated that incentives were useful to reduce payback levels to those acceptable to customers, but did not discuss how this would lead to sustainable changes in the marketplace.
- Lack of information was cited as a barrier, and a program that provides better information on efficiency, savings potential, and available technologies was mentioned as a need by one respondent.
- Difficulties associated with finding and selling to the ultimate decision-makers within complex organizations was mentioned as an obstacle as well. Some respondents recommended that EESPs and intervention programs use several points of contact within complex organizations, rather than focusing exclusively on site managers.
- Uncertainty over changes associated with deregulation was mentioned as inhibiting some customers from making efficiency investments. Some customers are unsure of what price to use to forecast their savings streams, while others expect that price or tariff reductions will provide more savings with less hassle than efficiency investments over the next few years.

7.4.7 Preferred Roles of Actors/Agencies in Program Delivery

There are a number of agencies and stakeholders that are, or potentially could be, involved in the NSPC program. The non-participants were asked whether there were certain agencies or actors that should be involved in certain phases of program design and delivery; or alternatively, whether there were agencies that they felt would be inappropriate to be involved in particular roles. While some of the firms did not have preferences (three respondents), there were a few strongly held opinions on the array of agencies involved in program delivery in the state:

- The issues of “agendas” and “authority” were raised by several respondents. One respondent thought there were too many agencies with “agendas” in the State, and too many that “thought they had authority.” Another suggested that agencies with vested interests should not be involved in setting prices. Another suggested that the CEC consistently attempted to “regulate through the utilities” (which the respondent said should be discouraged). Another respondent flatly stated that the state regulators and governmental agencies should not be involved in designing and delivering efficiency programs. One respondent believed that the CBEE had become responsible for too much too fast and were not knowledgeable enough yet to design good programs and/or to distinguish those actors with too many vested interests.
- One firm felt strongly that either the utilities or the utility staff would be the ones that would have to be involved in the programs because they are the ones with the best/most experience, and that even if others were assigned as administrators, they would need to

hire the experienced utility staff. However, two ESCOs were interested in eliminating the utilities from any role: one preferred that the utilities be moved out of the merchant business; another felt that the utilities worked to confuse the customers so that they would remain in control (defaulting to the status quo). One felt that utilities should not be involved in implementation, only design.

- Some suggestions were made about actors that should be involved in program delivery, but were not sufficiently in the loop. These included building owners and management associations (BOMAs), trade associations, large end users, and civic and municipal groups.

7.4.8 Non-Participant EESP Recommendations for Improving the NSPC program

Feedback and recommendations regarding the current program design were provided by several of the firms that were familiar with the Program. The majority of the suggestions came from ESCO and Retail ESCO firms. These suggestions are summarized below:

Incentive/Pricing Design

Regarding goals for the design of incentives, the respondents were fairly evenly split. Several respondents thought prices should be set at the overall kWh level - that saving kWh, regardless of source, is the goal. They also cited simplicity as a reason for setting overall kWh levels. Another group of respondents felt that the end-use level (differing prices for lighting, HVAC, etc.) was the appropriate way to set prices. One respondent suggested using overall kWh pricing, with a refinement for peak and off-peak savings. Most who argued for end-use level pricing felt that costs were better reflected this way and provided a more refined and targeted incentive. Only one respondent felt that specifying prices at the “measure” level would be best. Their argument was that incentives at this level would be more related to measurable savings and would be clearest. Another pointed out, however, that incentives at the measure level could lead to trying to sell one particular manufacturer’s brand of equipment. ESCOs more frequently recommended end-use type pricing; other firms suggested overall kWh incentives in higher percentages.

Aggregation Rules

Most of the respondents felt there should be a mechanism available for smaller customers to participate in the program (only one stated that they were not interested in small firms, and two had no opinions). One respondent flatly stated that there should be no minimum - that all sizes of customers should be eligible. Two respondents that were familiar with the aggregation rules noted that there were significant issues related to M&V for aggregated customers. One respondent did not participate because they found that the costs associated with the M&V were much too high to make aggregation a realistic option, and that it was not clear whether later dropouts from aggregated groups would disqualify the application. Multiple respondents noted that to get smaller customers involved in the program, much lower paperwork requirements and clearer benefits were needed.

Monitoring and Verification Protocols

A variety of opinions were expressed. Most of the feedback was that the M&V was complicated (and too complicated for customers); that it should not extend very long (2 years was mentioned by one respondent); that the rules for aggregation and multiple sites were too expensive to implement; and that the M&V would influence measure selection. Respondents felt M&V is important, but not to the level included in NSPC stipulations. The M&V for lighting was also criticized as being unnecessary.

Technical Assistance and Outreach

One firm suggested establishing “charettes,” sponsoring expert panels on building design to help on individual buildings. One suggested that endorsement and promotion (marketing support) would be helpful. This would involve having the utilities more effectively transfer some of their credibility to other actors in the field, since they hold the trust of many of the customers. One firm suggested that the best way to provide assistance would be to undertake focused outreach to the right audience. The outreach on efficiency needs to be targeted at the customer decision-maker in the specific non-residential business sector. They said articles in trade journals, jointly written with an industry insider or end-user, focused at the food and beverage, hospital, pulp and paper and other journals would be effective. They noted that “half-inch reports” are not effective for the audience that needs to be reached. Others also felt it was important for the EESPs to talk to multiple individuals at different level of target companies to improve sales.

Financial-Related Suggestions

Requests for recommendations regarding assistance to help firms get more efficient equipment into the marketplace sparked a great deal of discussion. One categorized “what works” as: (1) buying the equipment for the customer, or buying it down (rebates, etc.); (2) distributing efficiency equipment more widely; (3) manufacturer incentives; and (4) stricter building codes. A majority agreed incentives were useful to improve paybacks, to get participation in programs, and to spur adoption of efficient technologies. One noted the difficulty, however, between the short term incentives that are needed to get purchases of equipment, with the longer term goal of market transformation. They pointed out that providing short term incentives did not ensure that when a bulb burned out it would be replaced with another high efficiency bulb. Financing was also noted, including loan assistance. It was noted that governmental customers can more easily get loans for these types of investments, and assistance of this type might be helpful for non-governmental customers. One firm suggested using strategies of tax breaks similar to the renewables breaks offered in the past.

Feedback on Other Programs

As far as previous programs, the New Jersey Standard Offer program was congratulated for some aspects, but others criticized its bureaucracy; one mentioned a simple rebate program that they liked. Many complimented the simplicity and impact of past rebate programs in California in general. They liked the fact that the financial implications were clear up-front and the paperwork requirements were reasonable. One respondent noted that one of the difficulties with past programs was that they encouraged installation of measures, but did not encourage follow-up by

firms to make sure the equipment was working well and that customers were comfortable. One respondent suggested that a good design would include a “comprehensive” look at energy use by firms, and felt that rebate and other programs did not necessarily encourage that.

During this project, utility implementation staff and their technical consultants were interviewed twice. The first interviews were done in August 1998 to help formulate the policy and process issues and develop the recommendations presented in Section 3 of our First Interim Report. The summary of early process and policy issues is included in Appendix C of this report. This section summarizes the results of the *second round* of interviews that were conducted in early March 1999. These second-round interviews addressed the following issues:

- how well the program has worked to date,
- whether the program is achieving its goals,
- comments on changes to program design for 1999, and remaining changes to consider,
- perceived market effects,
- administrative and process issues for each of the principal steps of the program (BPA, DPA, PIR, etc.), and
- extent of workshops and other outreach efforts.

Readers not familiar with the implementation process and associated milestones should refer to Appendix A, which provides a summary of these aspects of the program.

8.1 PROGRAM DESIGN AND OBJECTIVES

Administrators were asked to discuss what they felt were the primary objectives of the NSPC. Administrators were consistent in stating that the primary goal of the program is to stimulate the EESP marketplace. Within this goal, specific objectives included: (1) forging new relationships between customers and EESPs; and (2) reducing customers' reliance on utilities as the primary source of energy efficiency services.

Administrators were asked whether they thought the objectives of the Program have been met. While their responses were mixed, the general tenor of their responses was that it may be too early to tell. Each of the administrators reports, however, that the Program was faithfully implemented in the field. Administrators also stated that a significant level of participation (among both customers and EESPs) was achieved, and the majority of incentives budgeted for the program have been reserved. At the same time, administrators acknowledged that, from the perspective of the EESPs, the program may not have worked well in all regards. Complaints made to administrators include: (1) the program, particularly the M&V requirement, is too expensive to warrant participation; (2) time delays present problems in customer/EESP interactions; and (3) the level of documentation and measurement that the program requires is greater than would otherwise be undertaken.

Use of the BPA during PY98 to effectively reserve large amounts of funding was most often cited as a core flaw in the program. In other cases, there was concern that the program covered very generous portions of costs. While changes in PY99 will address both of these issues, to some degree, it was stressed that abuse will still be difficult to determine, even if additional documentation is required and that new issues may arise in PY99. Excessive free ridership was also cited as an issue that was suspected of occurring in PY99. For example, in a few cases, pre-installation inspections determined that a portion of the projects for which incentives were being claimed were already installed. Additionally, administrators report that there were cases in which the EESPs were involved with projects for which they were not the sponsor of record. In such cases, EESPs may have been trying to avoid the EESP incentive cap. Even though outright abuse of the program was not observed, steps have been taken to prevent these issues from recurring during PY99.

8.1.1 Anticipated Impact of PY99 Changes

Administrators were asked to highlight changes in the basic program design for 1999 that they felt were especially important. While no single change was felt to be the most important, the following points were raised:

- **Changes in BPA Requirements.** Requiring more information in the BPA application was cited by one administrator as being very beneficial since it effectively requires that the EESP conduct a relatively detailed walk-through audit. It is hoped that this added step, as well as the additional funding, will help to avoid the "gold rush" phenomenon that was witnessed during PY98. Another administrator is more skeptical of whether the changes in the BPA requirements will actually make a difference. Based upon phone calls received, prospective applicants were saying that they could not provide audit information or fixture counts because they had not done the work and that customers would not allow them to do any work until the funding was available. The process may be further undermined by the fact that the administrators do not have plans to verify the information provided at this stage.
- **Changes in Incentive Prices.** Two administrators expressed uncertainty as to whether lowering prices will have the desired impact. One person stated that they did not personally see this as necessary, as they were not sure that the incentives were either too high or too low.
- **Participation Limits.** Participation limits were cited by one administrator as the most significant of the PY99 changes since such limits would allow more customers to participate.
- **Timing of Milestones.** According to the administrators, the timing of program milestones is one of the biggest concerns among EESPs. In some cases, EESPs are going ahead with construction after inspection, but prior to approval of their DPA, effectively taking the risk that they may not get the money requested, because the approval process is too slow. There is also a concern among EESPs about the policy of conducting inspections only after the DPA is submitted. One utility noted that they sense some resentment that, although the EESPs need to meet timelines in submitting DPAs, the utilities have not always met their

approval time limits. The program administrators are hopeful that the changes implemented in PY99, as well as increased familiarity with the program requirements among the EESPs, will lead to higher quality DPA submissions and a more even work flow at the various stages in the process, thereby resulting in shorter turn-around times for approvals.

8.1.2 Remaining Modifications

Program administrators were asked to identify and discuss additional modifications that may be undertaken for the PY99 program and beyond. The two principal issues raised were:

- **Continuing Efforts to Simplify M&V.** The administrators report that they are continuing efforts in the area of simplifying the M&V. Documentation is being developed for specific measures, including spreadsheet-based forms that will make the M&V process easier to complete and case study examples. Discussions are reported to also be underway with respect to changing the specifications for sampling strategies, especially lighting where current M&V requirement (especially for smaller projects) may be too burdensome.
- **Consideration of a One-step Application Process.** One administrator questioned, fundamentally, the ability to reserve funds and suggested that the CBEE re-visit the concept of not even having a basic project application. Under this approach, it would be a one-step process. It was noted, however, that some EESPs would balk at this approach without a firm commitment for year-to-year funding since they will be reluctant to invest time and resources to apply for incentives that may not actually be available.

8.2 PERSPECTIVES ON NEAR-TERM MARKET EFFECTS

Although the documentation of market effects is the long-term goal of this evaluation, each of the administrators was asked to identify any impacts they see the program having upon the marketplace. While the administrators generally did not feel that they were in a position to identify such market effects, they offered the following perspectives based on their experiences with the program to date:

- **Positive Influence of M&V Protocols.** In one case, it was reported that a *customer* liked the M&V portion of the program because it allowed them to quantify the benefits from one of their projects. Having such information was viewed by this customer as being extremely valuable since having “hard numbers” would build credibility and aid the internal sales process on this and future efficiency projects.
- **Increased EESP - Customer Interaction.** It was felt that the program has helped to forge greater interaction between customers and EESPs, and one administrator was pleased to see a high number of applications submitted by third parties rather than customers doing the work by themselves. Others had hoped the percentages of non-customer submittals would be even higher. The program is also viewed as enhancing the credibility of EESPs through their relationship with the CBEE.

- **Emerging Niche Support Businesses.** The administrators do not, themselves, provide a significant amount of support to EESPs during the application or M&V processes. One administrator noted that the program is stimulating a secondary market to support participation in the program – sometimes working with sponsoring EESPs, and sometimes providing more limited special assistance in areas such as application preparation and M&V design/implementation.
- **Innovation in Participating Facilities and Process Installations.** Administrators cited several instances in which the types of facilities that were being retrofitted under the SPC program had not previously participated in traditional rebate programs. Administrators thought the SPC Program may have allowed for more innovative applications than traditional prescriptive rebate programs, particularly among industrial customers. The degree of innovation observed in commercial and institutional facilities was considered to be less, with most projects reported to be fairly standard installations.

8.3 ADMINISTRATION

In general, the administration of the program was viewed as satisfactory, with no fatal flaws occurring in the process. One administrator noted that the process has gone largely as expected, except for some periods of high workload in reviewing projects. Program administrators stated that some EESPs and customers consider the Program complicated. However, they believed that much of applicants' confusion would decrease with experience. Despite their generally positive perspectives on the overall implementation of the Program, all of the administrators acknowledged there were a number of issues that had come up during 1998 that were important to discuss and in some cases address through the changes included in the 1999 program. These issues are discussed in the remainder of this subsection.

Note that, as of early March 1999, less than half of the 1998 DPAs had been approved. All projects have until November 15, 1999 to complete and submit the final project installation reports (PIRs) on PY98 projects. As such, the final count of projects, as well as the final impressions of the overall program administration process and milestones, will not be known until the end of 1999. A summary of the status of the disposition of projects as of late April 1999 is provided in Table 8-1.

Table 8-1
Summary of 1998 NSPC Project Disposition by Major Milestone

Utility	# Projects	# Canceled	# w/DPA Submitted	# w/DPA Accepted	Contracts Signed	Completed PIRs
PG&E	61	24	29	12	1	1
SCE	123	27	75	50	41	3
SDG&E	46	10	31	15	14	2
Totals	230	61	135	77	55	6

8.3.1 General Process-Related Issues

Administrators were asked to discuss what they thought were the most important issues associated with each of the key program milestones. Summaries of the issues raised are provided below:

- ***BPA submittals and approvals were straightforward.*** By design, the BPAs contained very little information and had few requirements. The key BPA issue was that the process was perhaps too easy and led to the reservation of funds in cases where some projects had low probabilities of being completed (often because of inadequate customer commitment). One of the positive changes cited by administrators for PY99 is that the BPA will include more analysis and will better screen out projects with a low probability of completion.
- ***DPA submittals and approvals were not straightforward.*** *To date, DPAs involve a large number of iterations between EESPs and Administrators and are taking more time than anticipated to be approved.* Even though the DPAs can become particularly complicated for projects that are multi-site or multi-measure, a surprisingly high percentage of *all* submittals (as high as 90% for one administrator) did not meet the review criteria and had to be revised. Applications, especially multi-site ones, typically required a significant amount of work to resolve issues associated with estimating savings and proposing M&V plans.

Following the initial submittal, administrators generally reported that approximately two thirds passed on the second submittal, while the remaining applications passed on the third or fourth submittals. Within this context, it was felt that the 45-day turnaround for administrators to approve DPAs may be a reasonable target for higher quality submittals but is not reasonable for applications that require numerous re-submittals. Applications that seem to pass most consistently and most speedily are often lighting projects proposed by ESCOs that specialize in lighting.

One utility specifically doesn't try to enforce the 45-day review period with its technical reviewers because it perceives that doing so may risk short-changing the technical review by possibly accepting a proposal that does not meet the program standards. While it is expected that the procedures manual for 1999 will continue to require a 45-day review period, administrators say the process may still take longer since their first priority is to ensure that projects meet the contractual requirements of the program.

- ***DPA-related workloads are sometimes uneven and too high at peaks.*** The DPA review process occasionally bogged down during peak periods of DPA submittals and, as a result, workloads were often uneven. One utility, in particular, was overloaded with DPAs at the end of the year, a problem that was exacerbated by the retirement of one of their staff engineers. As a result, there are still several DPAs that are in their final review stages. Another administrator also reported that uneven flow of DPA submittals created peak work loads that were difficult to manage. An option being considered by one of the administrators is to add more reviewers during peak periods of work in order to minimize the potential for time delays.

- ***There are a few discrepancies between submitted forms and inspection results, including a few cases of early, un-approved installations.*** In a few cases on-site inspections revealed discrepancies in baseline equipment. For example, some applicants appear to have used out-of-date facility blueprints to fill out portions of their DPAs. Some discrepancies between application forms and pre-installation inspections have been observed in cases where applicants had already started the installation process. In some cases, it appeared that applicants had begun their projects prior to participating in the Program and were, therefore, free riders. In the case of at least one administrator, exceptions were made and pre-installation inspections were completed prior to the approval of the DPA. However, the administrator has stated that exceptions will not be made in PY99 and some EESPs have already objected.
- ***Some applicants had concerns about the qualifications of DPA reviewers.*** One administrator noted that there has been some concern expressed by project applicants about the qualifications of people hired to review DPAs. Administrators stated that consistency in staff qualifications and review procedures is important to satisfying applicants concerns for consistent, high-quality review.
- ***Streamlining.*** Administrators believe there has been some success in streamlining the application process for 1999. One administrator stated that further streamlining of the M&V requirements and application process is desirable.

8.3.2 Issues Associated with the Review Process Itself

Another set of questions asked of administrators focused on the details of the review process and procedures themselves. The key elements of the application review process are discussed below:

- ***Administrator Procedures and Roles.*** The roles that the administrators play in the review process tend to vary somewhat. One administrator quickly checks to see if all the necessary pieces of a submitted DPA application are in place, and subsequently conducts the thorough review. Another administrator does not do the additional “quick” DPA review step. This administrator is considering changing their approach for PY99 by implementing a more formal, “upon arrival” review of DPA applications for completeness.
- ***Reviews, Criteria, and Checklists.*** Administrators stated that all review criteria come from their program procedure manuals. One administrator stated that one of the problems with the review process is that their manual is complicated and sometimes obscures some of the requirements. In addition, since the manual identifies more requirements than are actually used in the review, there is some concern that this may discourage people from applying. In reviewing DPAs, an initial checklist is used by engineers to look at the reasonableness of the proposal, including an assessment to determine if the baseline is correct and whether savings estimates are based upon standard calculations. One example of "soft criteria" that are also examined includes looking for an indication that the customer is truly aware that the application is being submitted by an ESP.

- **Inspections and Timing.** Before a pre-installation inspection is completed, administrators want to make sure an application is complete. There have been some situations in which the applicant wanted to have pre-installation inspections completed immediately after the DPAs were submitted. There are cases in which they have had to make a special effort to accommodate a project schedule but didn't change the process.
- **Communication with Applicants.** One issue related to the quality of applications and the process whereby applications are critiqued is that of communications with applicants. A variety of approaches have been used thus far, including e-mail, telephone calls, and regular mail. Written reviews are very time consuming and have therefore led to a more informal review approach where applicants are informed of DPA deficiencies via telephone or in-person so that potential problems can be quickly resolved. While this works in most cases, it did not work in others. In addition, informal methods, almost by definition, were not well documented. Consequently, there may be a need to set internal policy as to what inquiries are formal versus informal, to implement requirements for consistent documentation, and to consider periodic updates/reviews of progress on questions and follow-up.

One administrator is revising their internal DPA review process to include: (1) acknowledgment that a DPA was received; (2) top-level review within two weeks to get general feedback to applicant; and (3) an indication of when the applicant can expect a response. One administrator suggested that more formal goals be set for initial turnaround of DPAs, perhaps based upon a simple checklist-type review for completeness and general adequacy.

8.3.3 Quality of Applications

Administrators were asked to discuss the quality of applications and any factors underlying observed variations in quality. Responses to this line of inquiry are summarized below:

- **DPA quality/complexity issues.** Administrators reported that the overall quality of *single-measure, single-site* applications was generally fairly good because the forms are simpler and more limited in these cases. Administrators found more problems in cases with *multi-site, multi-measure* applications that were all combined into one very large application. Administrators report that sorting through some of these applications was extremely difficult as they could entail hundreds of pages. Administrators also report that instructions were sometimes not followed correctly for these complex applications.
- **Review criteria and “pass rates.”** Establishing uniform review criteria was a challenge. Administrators have discussed creating review documents that would make this process more uniform but, given the experience of revising the PY99 program, there is some uncertainty as to how far along this has progressed. One utility hopes that 80 percent of DPAs will be complete upon initial submittal. For PY98, the figure was approximately 50-60 percent.

- **Deficiencies found in DPAs.** The element most often found lacking in the DPA was the M&V plan. This seemed to be the most common reason for administrators to require a re-submittal. It was stated that a few applications did not have *any* M&V plan. The other common issue with applications noted by administrators was a general failure to document baseline consumption or operating characteristics.
- **Rejections, re-submittals, and related issues.** Outright rejections of applications very rarely occurs. In the vast majority of cases administrators simply ask applicants to address identified deficiencies by re-submitting applications (sometimes, this occurs multiple times in the DPA process). Among the three administrators, only one application has actually been rejected because the measures were found to have been installed prior to the pre-installation inspection.

Program administrators also stated that they generally try not to require resubmission of an application unless there is a blatant error. Substantial efforts are made to work with applicants in order to refine proposals such that they are approved. Consequently, this has led to approval periods for DPAs that have taken considerably longer than 45 days. One administrator suggested that the adherence to deadlines for the applicants followed by delays on the utility side had led to some resentment on the part of EESPs. Administrators are hoping that time lag issues will be resolved through changes that have been made in the overall process, including greater clarity in the application instructions, and changes that will serve to more evenly spread the workload.

8.3.4 Withdrawal of Applications

Administrators report that some projects dropped out of the program when they found: (1) that they were not eligible for the program; or (2) that the timing of their project was longer-term and would not be completed within the program period. Examples that were provided of other reasons why applicants dropped out included the following:

- Two applicants dropped out because new managers at the customer sites were not interested in pursuing the project, or redirected the money for the project.
- Two applicants' projects dropped out because they exceeded their end user funding cap.
- One project was only authorized for the remaining money at the end of PY98, but elected to re-submit in PY99 when more funding would be available.

While quite a few applications were withdrawn from the wait-list at one utility, a high percentage of these were installed outside the program. Based on an informal analysis completed by one administrator, 50 to 60 percent of the projects that withdrew their applications went ahead and completed the project outside of the program. While in some cases the administrators never heard from the applicant, a large number called the administrator and explained why they were withdrawing their applications.

8.3.5 Issues Around M&V Plan Approval

M&V was identified in our earlier reports as a controversial aspect of the program and it has continued to be so. Administrators provided their perspective on the following aspects of the M&V process:

- **Feedback from EESPs.** All three of the administrators noted that there had been a number of complaints from participants regarding the cost of M&V. From the perspective of the program administrators, however, it is hard to determine whether or not these complaints are legitimate. One felt that some applicants would be only be satisfied if there were no questions and applications were accepted as delivered.
- **Pre-installation monitoring.** Administrators stated that situations arose where applicants did not understand pre-installation monitoring. The administrators are now reviewing the M&V documentation to see whether clarifications are necessary. In these cases, it is difficult to tell whether this issue is related to the education process or to the clarity of program materials. Administrators state that they have spent some time explaining to applicants why pre-installation monitoring is necessary and how to do it effectively so that it actually provides the appropriate baseline.
- **Sampling and technical approach issues.** Sampling requirements have been an issue, especially for lighting. One administrator noted that the program may be requiring too much in 1998 and that some changes were being made for 1999.
- **Consideration of incremental approach to M&V costs.** There is a difference of opinion as to what M&V should cost and what portion of the program-related M&V costs are truly *incremental* to what would be required in the absence of the program. The PY98 program manuals define "cost-effective M&V" as:

“...the documented M&V costs being less than or equal to 15% of the total value of the incentive payments projected to be paid by the Administrator in an approved BPA. For the purposes of calculating the cost-effectiveness of the M&V, M&V costs can only include those costs (1) directly associated with M&V activities and reporting, and (b) necessary to meet M&V requirements associated with the SPC Agreement.” (Section III, Page 1-3, SCE Manual).

This reference is being omitted in PY99 because of the difficulty associated with parties agreeing to what is “associated with the SPC Agreement” versus otherwise necessary.

8.3.6 Pre-Installation Inspection

Pre-installation inspection results were generally in agreement with the information contained in project application forms. As mentioned previously, in at least one case, items that were included in the incentive application were found to have already been installed. And in a few instances where the applications were for complex situations, the information was found to be inaccurate, thereby requiring correction by the applicant and subsequent re-inspection. As one administrator put it, “when you have 200 motors of 1 to 5 horsepower, there are often going to be some errors.”

Time lags in the overall process have posed challenges at some sites during the inspection stage. In one project, a multi-site school, equipment had been moved and could not always be found at the location listed on the DPA. Also related to time delays, the person who serves as the on-site contact has in some instances been different from the person who originally completed the equipment inventory, thereby complicating the inspection process. The process does require that the person who filled out the forms be the one accompanying the on-site inspection.

8.3.7 Contract Signing Process

When asked in early March 1999 how many contracts they had signed to date, one utility reported 40, one reported 10, and one reported zero. The latter utility, which had approved several DPAs before the end of the year, reported that they still need to send applicants draft contracts. Delays in getting contracts to applicants has, in this case, been attributed to issues related to legal support. Although this administrator has not yet had any experience with the contracting process, they expect that although some firms will have exceptions to the standard contracts -- especially larger customers and EESPs, most will not.

One of the administrators with some signed contracts indicated that they have had surprisingly few contracting issues. In only one case was there an applicant that wanted any changes, and even these changes were relatively minor. The smoothness of this process was attributed to the fact that the contracts were available "up front" and that the contract stage comes at the conclusion of difficult negotiations regarding the M&V process and estimated savings.

A relatively minor issue associated with the contracting process is the deposit procedure. Under the PY98 guidelines, a deposit or letter of credit was required when the DPA was submitted. This posed some problems, however, because the amount of the required deposit often varied when the final savings estimates were agreed-upon. This will change in 1999 so that the deposit or letter of credit will only be required to be sent in with a signed contract that is returned by the applicant.

8.3.8 Project Installation Reporting Process

Only a handful of project installation reports (PIRs) have been completed to date. With respect to the limited number of installations that have been completed thus far, everything is reported to have gone very smoothly. Applicants complete the installation and submit the project installation report. The administrator then arranges for a site inspection. Two checks are then sent: one to include the deposit plus interest, the other for the initial 40 percent payment. According to one administrator, payment requests were processed almost immediately (within a day or two). Another administrator expects payments to be slow; however, taking into account the earnings milestone associated with this step, they are hopeful that this will receive attention in-house.

8.3.9 M&V Reports

None of the utilities is yet in the M&V stage, although the following issues were raised with respect to this topic:

- **Concerns about adherence to M&V plans.** With respect to the M&V reporting process, some administrators are concerned that some EESPs may not follow the M&V plan that was agreed upon, or that there may be equipment failures that complicate the process. To address this uncertainty, one utility encourages customers to provide some metering data after a few months of monitoring just to verify that everything is working properly and provide an opportunity to correct any identifiable problems. Other administrators have not implemented such a review process, largely because of potential liability concerns associated with this level of involvement.
- **Baseline monitoring concerns.** Pre-retrofit monitoring was a common area of misunderstanding, with issues involving failure to document assumptions. Additionally, there is some confusion as to when pre-installation metering is required as part of the M&V process. Thus, administrators had some concern that disputes might arise down the road when the baseline monitoring results are utilized.
- **Variations in expertise in monitoring.** Some administrators expressed heightened concerns about monitoring for customer-sponsored projects because some customers appear to lack adequate in-house technical expertise.

8.3.10 Satisfaction with Technical Consultants

The utility administrators seemed reasonably satisfied with the performance of their technical consultants. Some negative comments were reported to have been received from program participants (typically reflecting issues relating to timing and the adequacy of the technical consultant's expertise with particular measures). One administrator reports that they are generally satisfied with the performance of the technical consultants even though there have been comments from participants who feel that the reviews are too picky and may be conducted by reviewers lacking technical expertise. This particular administrator, however, was quite comfortable in having the technical consultants err on the conservative side and noted that it is not their responsibility to be making judgment calls.

In general, the program administrators acknowledge that there may be a need to have more consistent and timely reviews. While some DPA reviews have been timely, others have not. Importantly, the administrators report that neither their staff nor the technical consultants are "sitting on" applications. Rather, administrators believe some applications are getting bogged down in the Q&A re-submittal process.

8.4 PROMOTION OF THE NSPC

Since August of 1998, each utility administrator has held workshops with EESPs to promote and educate interested parties regarding various aspects of the program (note that many other workshops were held earlier in the year). All of the utilities conducted workshops late in 1998 on M&V; PG&E also conducted workshops addressing aggregation. These workshops are summarized below:

- The workshops were generally geared toward EESPs, especially those that had been participants in the PY98 program. Workshops were advertised via e-mail (including the CBEE service list) and regular mail, as well as web sites and personal phone calls from account executives.
- Some customers attended the workshops, especially the aggregation workshops held by PG&E, in which representatives from several interested municipalities participated.
- The content of the workshops was primarily focused on implementation issues that were of most interest to customers and EESPs that were already participating in the program. These workshops were not intended to serve as a vehicle for promoting the program to customers and or EESPs that had not already participated.

This section repeats Section 5 of our Second Interim Report. It provides an analysis of the NSPC program participation as of Fall 1998. One more update of the program tracking data will be provided as part of this evaluation. The final update will be developed later in 1999 and will be published as a supplement to this final report. Since the statewide data integration requires a significant amount of painstaking work, a decision was made by the research team to wait to conduct another update until most or all of the projects have at least made it through the DPA approval milestone. This is because conducting a statewide integration and update now would only result in another data set for which a large number of projects remain uncertain since they have not had DPAs approved as of this writing.

The analysis presented in this section was conducted in order to characterize known program activity as of Fall 1998.

Separate program tracking databases are maintained by each of the three interim program administrators. To accomplish the analyses presented in this section, extracts from each of the three program tracking databases were combined to allow for a summary of program activity at an aggregate, statewide level. Note that each utility database exists in a different format and is being updated according to different protocols. As a result, developing an integrated statewide database during the program implementation process presented formidable challenges to the evaluation team. Although we have made every effort to reconcile differences in definitions and a variety of other discrepancies between the data sets, we must caveat the information presented in this section by saying that we can not completely warranty its absolute accuracy. The analyses are preliminary in nature and will be conducted again after the final report for this evaluation as more of the DPAs are accepted. Because changes are still occurring in the program with respect to project cancellations, new approvals, and changes in project characteristics, the final population characteristics for the program will no doubt differ from those presented now. Summaries of our analyses to date are organized as follows:

- Summary of Program Activity to Fall 1998
- Composition of Applicants: Customer Sponsors vs. Non-customer Sponsors
- Characteristics of Subgroups of Non-customer Sponsor Accepted Applications
- Statewide Participation by End User Segments
- Statewide DPA-Based Cost Information

9.1 SUMMARY OF PROGRAM ACTIVITY TO FALL 1998

Program activity to date is summarized in Table 9-1 in terms of the number of accepted applications, sites associated with those applications, the amount of associated incentives, the number of unique customers, the number of unique EESPs, and the value of incentives that are wait listed. As shown in the table, there were 92 unique end-use customers with accepted applications. This figure includes both those customers who are sponsoring their own applications and those that appear on the applications where third-party EESPs are the customer hosts. There are 144 NSPC applications associated with these customers and 605 individual sites. The total value of accepted incentives was roughly \$33.8 million (note this figure will not match exactly with what is obtained by summing the figures on the three utilities' web-sites because of real time changes such as cancellations and approvals that have occurred since we finalized our data sets for this analysis). There are also a total of 26 unique EESPs with accepted applications. Finally, there were approximately \$1.7 million dollars of projects that were wait-listed and all of these were associated with the SCE program. This figure is down dramatically from the \$20.7 million dollars that we reported in our first interim report prior to inclusion of the 4th quarter funding. Note also that the total requested funding of all applications (accepted and wait-listed) has dropped significantly as well (from \$46.5 million to \$35.5 million). This is partly because a number of wait-listed applications were not resubmitted under the fourth quarter funding rules and those that were resubmitted had to come in under the \$400,000 cap. In addition, some projects have been canceled since our second interim report was submitted.

Table 9-1
Summary of Program Activity to Date

Activity Level	Total
Total unique customers	92
Total Number of applications	144
Total Number of sites	605
Total unique third-party Energy-Efficiency Service Providers	26
Total incentives funds committed	\$33.8 million
Total Savings from applications with accepted BPAs	231 GWh
Total amount of incentives on wait list	\$1.7 million

9.2 COMPOSITION OF APPLICANTS: CUSTOMER SPONSORS VS. NON-CUSTOMER SPONSORS

Table 9-2 summarizes all program activity (including accepted and wait-listed projects) for customer sponsors and non-customer sponsors. Customer sponsors are defined for this discussion as those customers who are contracting directly with the interim administrators and who are the sponsor of record on their submitted applications. Non-customer sponsors, as defined in this analysis, are third-party sponsors who are contracting with the interim administrators on behalf of a host facility. These third-party, non-customer sponsors are also referred to in this report as EESPs (energy-efficiency service providers). Table 9-2 shows that about 59 percent of the project activity was applied for through non-customer sponsors.

Table 9-2
Applications Submitted by Customer Sponsors and Non-Customer Sponsors

Firm Type	Pct. of Firms Applying	Pct. of Incentive \$ Applied for
Non-customer sponsors	59%	60%
Customer sponsors	41%	40%

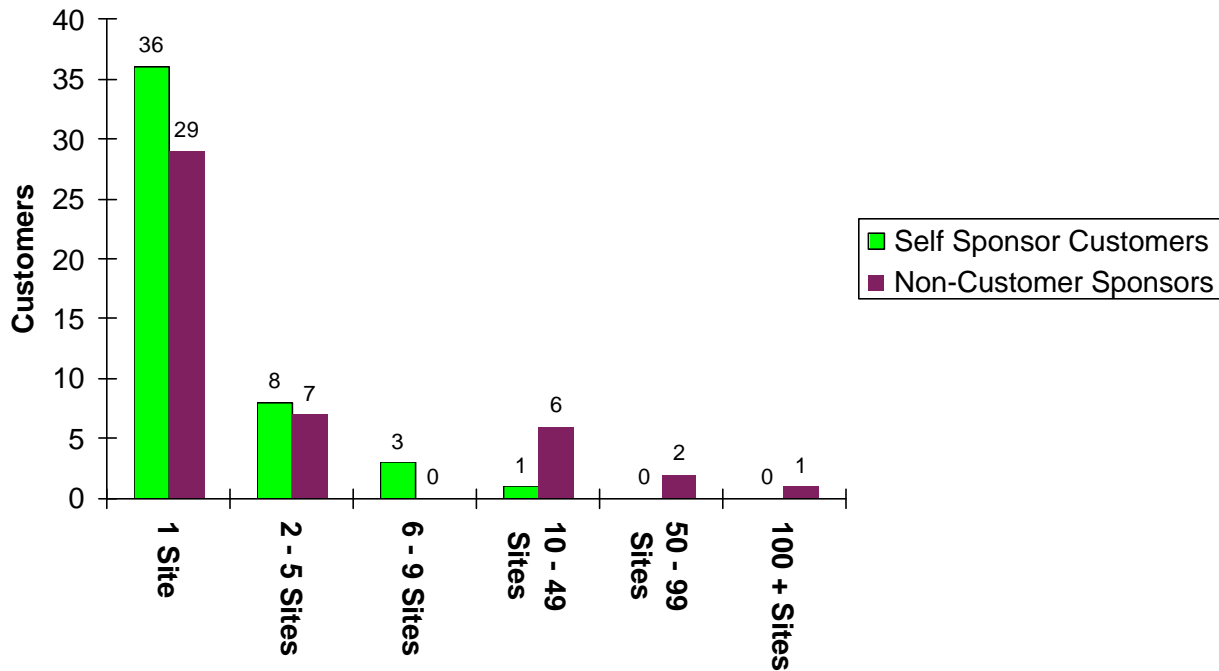
Table 9-3 summarizes program activity and a variety of indicators that allow a comparison of characteristics between accepted projects sponsored by customer versus those with non-customer sponsors. The table shows that non-customer applications tend to include more sites and are for larger incentives. Customer applications are for higher incentives on a per site basis.

Table 9-3
Composition of Characteristics for Customer vs. Non-Customer Accepted Applications

	Customer Applications	Non-Customer Applications	Total
Activities			
Number of unique customers	48	45	92
Number of applications	63	81	144
Number of sites	112	493	605
Total \$ incentive (thousands)	\$13,772	\$20,048	\$33,819
Comparative Indicators			
Applications per customer	1.3	1.8	1.6
Sites per application	1.8	6.1	4.2
Incentive \$ per customer (000's)	\$287	\$446	\$368
Incentive \$ / application (000's)	\$219	\$248	\$235
Incentive \$ per site (thousands)	\$123	\$41	\$56

Figure 9-1 shows the range in the number of sites accepted from both self-sponsoring customers and non-customer sponsor perspectives. (Note: One customer submitted applications to one utility as a self sponsor and to the two other utilities using a third party sponsor.) This figure shows that EESP sponsors tended to be associated with customers for whom applications were submitted for a large numbers of sites. For example, EESPs were sponsors for nine of the ten customers with more than 10 sites each.

Figure 9-1
Number of Sites per Customer for Accepted Applications



9.3 CHARACTERISTICS OF NON-CUSTOMER SPONSORED APPLICATIONS

The following three subgroups¹ are used for the results presented in this subsection of non-customer sponsored applications:

- ESCO / Retail: This group consists of energy service companies that offer electricity in addition to demand-side services.
- ESCO / Traditional: This group includes traditional ESCOs.²
- Contractors / Engineers: This category includes firms that would typically provide energy-efficiency services as an adjunct to other professional services. For example, this group includes engineering design firms and contractors.

¹ See Section 7 for further discussion of these EESP definitions.

² Again, as stated in Section 7, we have generally followed the classification of traditional ESCOs presented by Dayton, et al., in "The Energy Services Company (ESCO) Industry: Analysis of Industry and Market Trends," 1998 ACEEE Summer Study, August.

Table 9-4 shows the number of participating non-customer sponsors by subgroup.

Table 9-4
Number of Participating Non-Customer Sponsors By Subgroup

Non-Customer Sponsor Category	Number of Unique Firms
ESCO/retail	3
ESCO/traditional	10
Engineer/contractor	13

Table 9-5 compares the project characteristics associated with each type of non-customer sponsor. The table shows that Engineers/Contractors submitted about half of the accepted non-customer applications for about 25 percent of the incentives. The ESCO/Retail EESPs submitted only 7 percent of the accepted non-customer applications for 29 percent of the incentives. Traditional ESCO EESPs submitted 42 percent of the accepted non-customer applications for 46 percent of the incentives.

Table 9-5
Comparison of Non-Customer Subgroup Shares of Accepted Projects

Percent of All Accepted Applications	ESCO / Retail	ESCO / Traditional	Engineer / Contractor
Percent of customers	9%	47%	44%
Percent of applications	7%	42%	51%
Percent of sites	17%	47%	36%
Percent of \$ incentive (000's)	29%	46%	25%

Figure 9-2 shows that no non-customer sponsors had a large number of unique customers. Most have only one unique customer and none had more than six unique customers.

Figure 9-2
Number of Customers Sponsored by EESPs for Accepted Applications

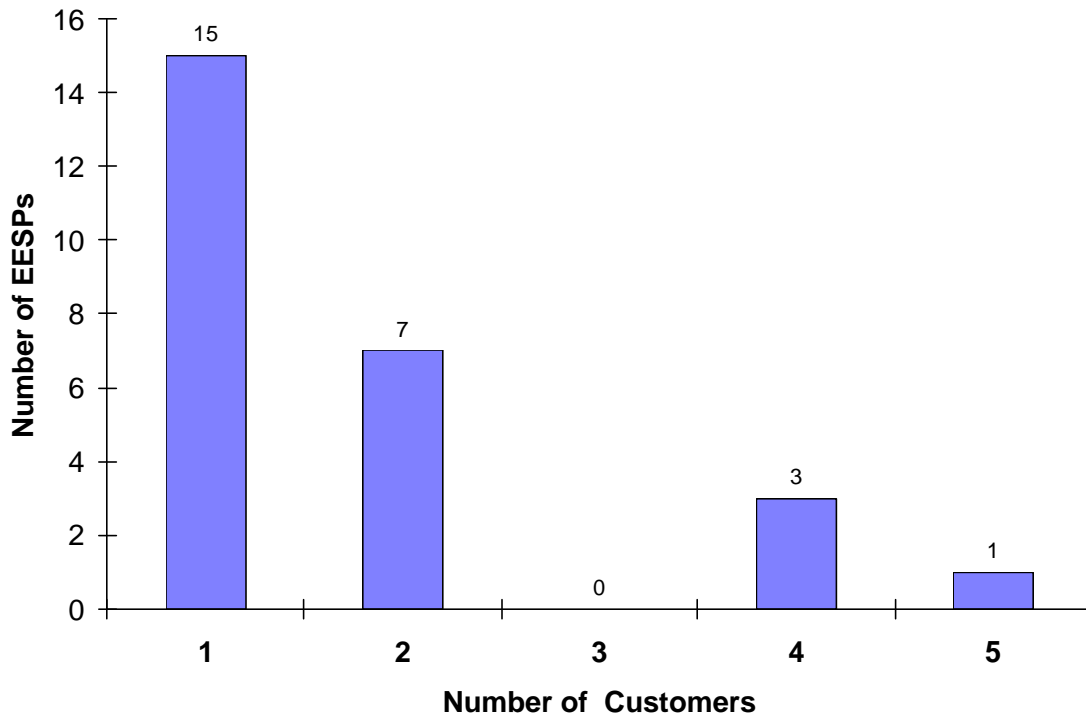


Table 9-6 shows a comparison of the top five non-customer applicants. The most successful energy service provider had almost \$5.4 million in incentives accepted for two customers with 80 sites. This one provider captured about 16 percent of the total program incentives or about 27 percent of the incentives captured by all non-customer applicants. Most other non-customer providers captured less than 10 percent of the non-customers' portion of the incentives and less than six percent of the total accepted incentives. The top five EESPs also accounted for 36% and 60% of the total accepted incentives and total non-customer accepted incentives, respectively. In addition, the 11 customers associated with these five EESP sponsors accounted for almost half of the project sites (285 of 605).

Table 9-6
Comparison of Top 5 Non-Customer Applicants

Provider	Provider Type	Number of Sites	Number of Customers	Total Accepted Incentives (\$million)	% of Total Incentives	% of Non-Customer Incentives
1	ESCO/Ret	80	2	\$5.4	16%	27%
2	ESCO/Trad	153	1	\$2.2	7%	11%
3	Engineering	28	1	\$1.8	5%	9%
4	ESCO/Trad	21	5	\$1.4	4%	7%
5	ESCO/Trad	3	2	\$1.3	4%	6%
Total		285	11	\$12.10	36%	60%

9.4 STATEWIDE PARTICIPATION BY END-USER SEGMENTS

Table 9-7 shows an estimate of incentive by end-user segment. The Industrial & Refrigerated Warehouse segment accounted for about 19% of the incentives and the Grocery segment accounted for 20%.

Table 9-7
Breakdown of Incentives by End-User Segment (*dollars in millions*)

End User Segment	Est. Accepted Incentives (millions of \$)	% of Accepted Incentives
Commercial-Other (includes non-government hospitals)	4.32	13%
Education	5.52	16%
Government	6.17	18%
Grocery	6.81	20%
Industrial & Ref. Warehouse	6.37	19%
Property	4.63	14%
Total	33.82	100%

Table 9-8 shows a breakdown of unique customer participants by end-user segment with accepted applications. As shown in Table 9-8, the Industrial & Refrigerated Warehouse segment had the greatest number of unique customers. In contrast to the above table, the Grocery segment has very few unique customers. Also of note is that four unique customers in this segment had multiple sites and applications for very large incentives.

Table 9-8
Breakdown of Unique Customer Participants by End-User Segments

End-User Segment	Est. # of Unique Customers with Accepted Incentives	% of Unique Customers
Commercial-Other (includes non-government hospitals)	21	23%
Education	13	14%
Government	13	14%
Grocery	4	4%
Industrial & Ref. Warehouse	31	34%
Property	10	11%
Total	92	100%

Table 9-9 shows the percent of unique customers with accepted applications that are not self-sponsors. The Property Management segment was the most reliant on third party applications with 70 percent of the unique customers having applications submitted by outside firms. The Government sector had the greatest percentage of unique entities as self-sponsored applications with 60 percent falling into this group.

Table 9-9
Percent of Unique Customers with Accepted Applications that Are Not Self-Sponsors
(i.e., those for whom a third-party firm submitted the application)

End User Segment	% of Unique Customers that are not Self-Sponsors
Commercial-Other (includes non-government hospitals)	43%
Education	46%
Government	38%
Grocery	60%
Industrial & Ref. Warehouse	48%
Property	70%
Grand Total	49%

Table 9-10 shows the end-user segments and percent of incentives for accepted applications for the top 10 end-user participants (including both self-sponsors and non-sponsors). It shows that one end user captured over 10 percent of the total incentives and that, in total, the ten customers with the largest applications accounted for 48% of the total accepted incentives for the entire program.

Table 9-10
Percent of Accepted Funds for Top 10 End Users

Rank	Segment	% of Accepted Funds	Cumulative %
1	Grocery	11%	11%
2	Grocery	7%	19%
3	Government	7%	25%
4	Property	5%	31%
5	Government	3%	34%
6	Property	3%	37%
7	Education	3%	40%
8	Education	3%	43%
9	Government	3%	46%
10	Ind_RWhse	2%	48%

Table 9-11 shows the end uses included in the accepted applications for two utilities. Note that these data are currently problematic because it is not tracked and reported to us in a consistent format by the three utility administrators. We were only able to obtain any end-use information from two of the three utilities. In addition, the data that were obtained often included records that could not be disaggregated into discrete end uses. As a result, there are several categories in the table below that are bundled across multiple end uses which precludes a clear analysis of the true end-use breakdown. This is an area of the current tracking system that presents a major limitation to the evaluation analyses being conducted. The limitation is even more acute at the measure level. During the Fall 1998 data integration, the evaluation team received measure data from only two of the three utilities.³ Within the context of the preceding caveats, we note the following: HVAC and Other projects appear to account for a larger share of incentives for self-sponsoring customers than for those working with third-party EESPs as sponsors.

³ One reason for this is that some of the utilities maintain that measure level information is not worth tracking in the databases at the BPA level because BPAs are somewhat uncertain. These utilities have stated a preference toward tracking the measure level information for accepted DPAs as these projects are further along in the program process. This approach may be reasonable given the effort involved in tracking measure level information. At a minimum, however, we recommend that the CBEE explore this issue further (because of its relationship to a variety of analyses including program cost-effectiveness) and should clearly articulate, as soon as possible, the extent of measure-level tracking that the Board expects for this program both in 1998 and in future years.

Table 9-11
End Uses Included for Accepted Applications
(includes data for two of three utilities only)

End Uses*	Number of Applications Including End Use	Total Incentives of Projects Including End Use	Percent of Total Incentives by End Use	Number of Customers Applying End Use (overlapping**)	Number of Sites Including End Use
All Customers					
L	36	\$6,058,862	21%	22	293
H	38	\$8,067,658	27%	26	54
O	12	\$2,983,559	10%	12	12
L,H	33	\$10,042,147	34%	24	169
H,O	6	\$1,943,403	7%	6	6
L,H,O	1	\$429,314	1%	1	1
Total		\$29,524,943	100%		
Non-Customer Sponsors					
L	27	\$5,695,565	29%	16	272
H	17	\$3,278,117	16%	9	25
O	3	\$333,258	2%	3	3
L,H	26	\$8,774,291	44%	17	153
H,O	5	\$1,898,270	10%	5	5
Total		\$19,979,501	100%		
Self-Sponsored Customers					
L	9	\$363,297	4%	6	21
H	21	\$4,789,541	50%	17	29
O	9	\$2,650,301	28%	9	9
L,H	7	\$1,267,857	13%	7	16
H,O	1	\$45,133	0%	1	1
L,H,O	1	\$429,314	4%	1	1
Total		\$9,545,443	100%		

*End use codes:

L = Lighting

H = HVAC and Refrigeration

O = Other

** If customers had multiple applications with different end use codes then the customer will be counted in each of the appropriate end-use categories.

9.5 STATEWIDE DPA-BASED COST INFORMATION

The following information represents aggregation of cost data provided by each of the utility administrators. This cost data was provided to a subcommittee of the CBEE during preparation for the CBEE's October 15th Advice filing. The data are available only from DPAs. The following caveats were provided by one of the utilities with their data and may hold true for the other utilities as well:

- “The...information is preliminary. None of these Detailed Project Applications have finished the review and approval process.
- Project cost information provided by project sponsors is not checked and could represent incremental or whole project costs.”

Note also that data were not received at a consistent level of aggregation from the three utilities. Therefore, we present statewide information only at a level available from each data set, namely, by application and end use. Two of the utilities provided information by site and by measure type as well.

Figure 9-3

Incentives as a Percent of Total Costs for HVAC&R Projects

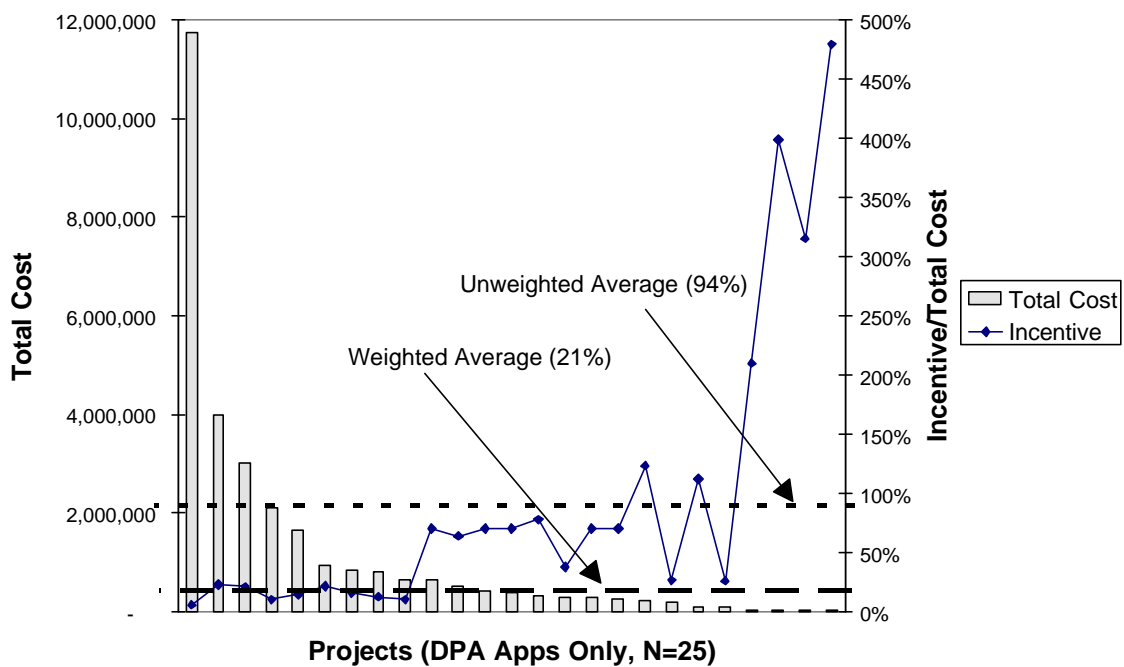


Figure 9-4

Incentives as a Percent of Total Costs for Lighting Projects

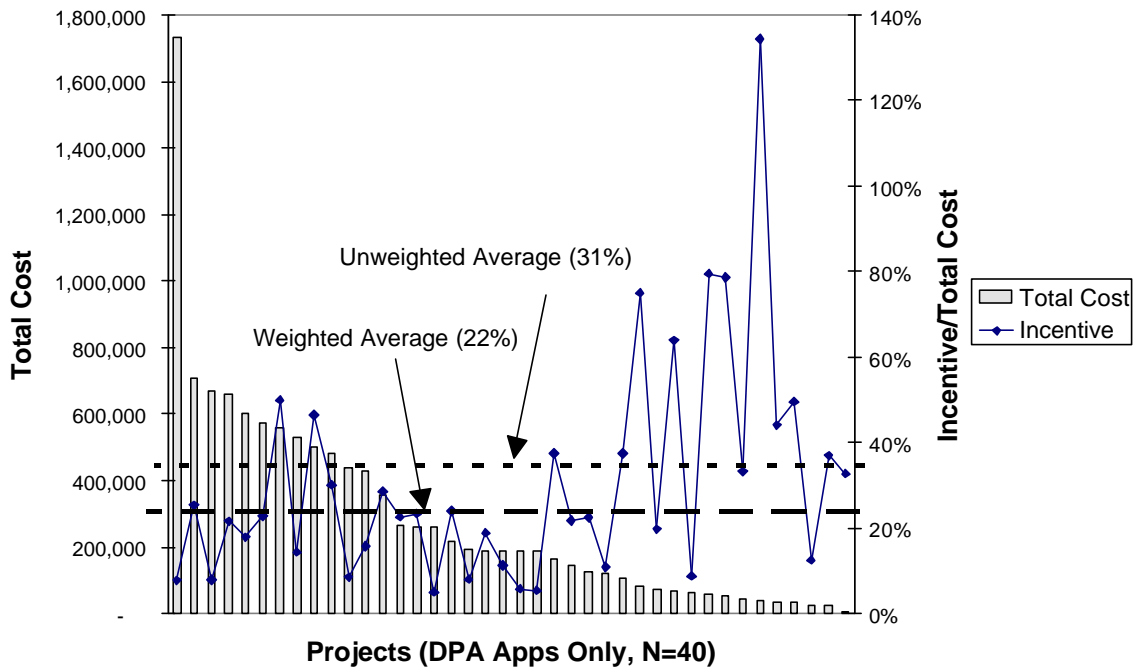
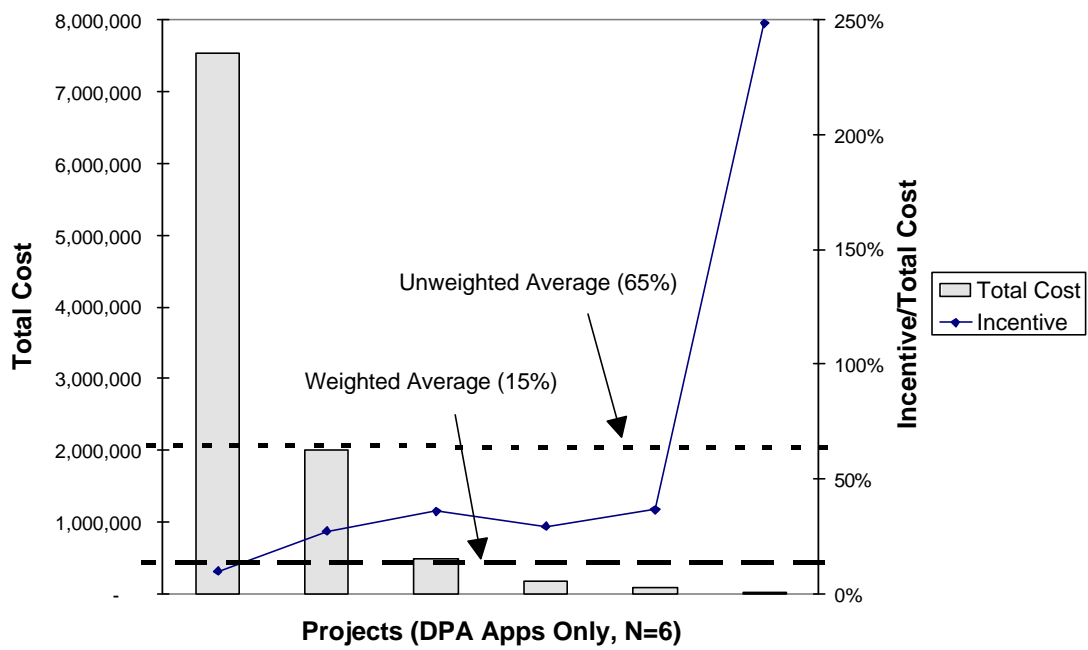


Figure 9-5

Incentives as a Percent of Total Costs for Other Projects



In this section, we provide a preliminary analysis of the evidence for any near-term market effects of the NSPC based on the research conducted to date. We revisit several of the hypotheses developed in the Program Theory section of this report (see Section 4) in order to assess the extent to which hypothesized changes in the market are or are not occurring as a result of the program. Because the program has only been in operation for one year, we are looking less for convincing, evidentiary proof of lasting, program-induced changes in the marketplace (which rarely occur so quickly from any new program intervention) and more for whether there are any early indications that any of the hypothesized sequences of events have begun to manifest themselves. This perspective is consistent with the theory-based evaluation approach introduced in Section 4 under which program effects are assessed at multiple points in time. Importantly, readers must keep in mind that the 1998 program is still being implemented as of this writing. Thus, by definition, some effects may not be observable since the intervention itself is still in progress.

The early assessments under this theory-based approach focus on whether there is any evidence at all for the hypothesized changes in the market. As time goes on, however, the standard of proof by which the program is judged gets higher and higher such that in order to claim a market effect, evidence must clearly show a market change has occurred, the change must be shown to be attributable to the program, and evidence must support the likelihood that the change will be durable (i.e., it will last after the intervention is removed or modified). Rather than waiting several years to exhaustively assess whether a program has had any particular market effect, theory-based evaluation utilizes early and frequent measurements over multiple points in time to provide feedback to policy-makers and program designers so that mid-course corrections can be made as necessary.

The hypotheses and indicators developed for this evaluation are summarized in Table 10-1. Each of the hypotheses shown in the table are discussed in the remainder of this section. Information associated with each of the hypotheses is drawn from the sections of this report summarizing the primary research conducted so far (principally, Sections 5, 6, 7, 8, and 9).

We mentioned above that we will address whether there is any evidence for near-term market effects by revisiting *several* of the hypotheses presented in Section 4. *Several* is an operative word here because the research design for this evaluation is not intended to support assessment of all of the hypotheses at this point in time. Specifically, we have longitudinal results for only two of the market actors involved in the program to date, namely, participant EESPs and the utility administrators. Both of these groups were interviewed *twice* during this project; first, in late summer and early Fall 1998 and, second, in early March 1999. There are three key market actors for which we have only one set of data: the population of California and non-California end users (surveys conducted in November/December 1998), end users that participated in the 1998 program (interviews conducted in October 1998), and EESPs that did not participate in the 1998 program

(interviews conducted in February 1999). Note that this disposition of surveys is consistent with the scope and objectives of this first-year evaluation as defined in the original request for proposals for this study. The intent of this research design was to develop as much information as possible for early process and market analyses, while at the same time putting in place a comprehensive baseline analysis that would provide a foundation for future longitudinal analyses based on re-measurements of the principal market indicators.

Table 10-1
Hypotheses and Indicators

Hypotheses	Market Effects Indicators
EESPS	
1. <i>Development of improved marketing and sales skills</i>	<ul style="list-style-type: none"> • Changes in marketing and sales practices - e.g., branding, advertising, marketing • Changes in targeting that lead to reductions in transaction costs (more offers to under-served segments)
2. <i>Changes in business strategies</i>	<i>Not known a priori, hypothetical examples:</i> <ul style="list-style-type: none"> • Successful bundling of both EE and energy commodity • O&M firms incorporate EE guarantee
3. <i>Energy-efficiency product and service innovation</i>	<i>Not known a priori, hypothetical examples:</i> <ul style="list-style-type: none"> • Increase in # & type of EE products & services • Expansion and innovation of performance contracting
4. <i>Changes in breadth and depth of EESP industry</i>	<ul style="list-style-type: none"> • Increase in # of EESPs • Increased market share relative to other non EE firms • Increase in breadth of EESP types
5. <i>Improved M&V Capabilities</i>	<ul style="list-style-type: none"> • Increase in # of EESPs doing own M&V • Improved knowledge and capability v-a-v M&V. • Increased M&V innovation
6. <i>Increased knowledge and awareness of performance contracting</i>	<ul style="list-style-type: none"> • Increase in measured awareness of performance contracting and ability to identify features
CUSTOMER/END USER	
1. <i>Improved confidence in EESP as credible energy-efficiency service provider.</i>	<ul style="list-style-type: none"> • Increased credibility rating of EESPs relative to utilities • Reduced reliance on regulated utilities for EE services • Increase in incidence of repeat customers for EESPs
2. <i>Increased confidence in measure savings.</i>	<ul style="list-style-type: none"> • Increased confidence in expectations of measure savings
3. <i>Increased awareness and knowledge of the benefits of non-lighting energy-efficiency</i>	<ul style="list-style-type: none"> • Increased or sustained levels of awareness and knowledge of EE opportunities
4. <i>Increase in role of energy-efficiency in energy-related procurement practices</i>	<ul style="list-style-type: none"> • Increased use of financial criteria for EE decisions • Increased consistency between energy and non-energy investment criteria
5. <i>Increased demand for EE products and services, especially non-lighting</i>	<ul style="list-style-type: none"> • Increase in penetration rate of EE products and services, esp. non-lighting
6. <i>Increased knowledge and awareness of performance contracting</i>	<ul style="list-style-type: none"> • Increase in measured awareness of performance contracting and ability to identify features among end users • Increase in penetration of performance contracting in end user mkt.

(Continued)

**Table 10-1 (continued)
Hypotheses and Indicators**

Hypotheses	Market Effects Indicators
OTHER BUSINESSES	
1. <i>Increased specification of EE products by distributors, designers, and installers</i>	<ul style="list-style-type: none"> • Increase in # of Other market actors that target EE opportunities • Increase in design and specification of EE measures
2. <i>Change of business strategies of distributors, designers, and installers towards integrating or diversifying into EESP functions.</i>	<ul style="list-style-type: none"> • Increase in # of Other market actors that offer EE products and services, including performance-based contracts
3. <i>Improved confidence in Other market actors</i>	<ul style="list-style-type: none"> • Increased credibility of Other market actors relative to utilities
4. <i>Improved M&V Capabilities</i>	<ul style="list-style-type: none"> • Increase in # of Other market actors doing own M&V • Improved knowledge and capability vis-a-vis M&V protocols

It is important to take stock of where we are in this evaluation process before we proceed to our discussion of the results to date. This is important so that readers are clear with respect to why some market indicators can be assessed on a preliminary basis, while others cannot (generally, because the requisite longitudinal measurements have not yet been taken). This will also become clear as we go through each of the indicators. Because a number of the indicators focus on hypothetical changes in the marketplace for which the indicators have not yet been re-measured, some of our discussion will focus on whether our baseline measurements were successful, whether we remain confident in the usefulness of the indicator, whether there are any critical issues associated with future measurement of the indicator, and whether any new indicators should be considered.

Finally, it is very important to remember when reviewing our analyses of the information available to date on the end-user hypotheses that we are only able to address these hypotheses using participant data obtained from the 1998 cohort. Thus, certain aspects of the results of this analysis can not necessarily be generalized to future program years, which may have different types of participant end users.

10.1 SUMMARY OF FINDINGS

In this section we provide a brief discussion of the findings from our assessment of the extent to which the 1998 NSPC engendered any near-term market effects. A summary of our assessment for each of these research hypotheses is provided in Table 10-2. Readers should keep the following in mind with respect to this assessment:

- *First, our assessment of the evidence in this section is made only with respect to the 1998 NSPC Program. Whether the results report here are generalizable to the 1999 NSPC Program or other any other related program concepts is not addressed in this section. Implications of this evaluation for the 1999 NPSC and PGC programs in general are discussed in Section 3 and Section 11.*

- *Second, we have tried to strike a balance in making our assessment between being conservative and assertive. We recognize the need for some conservatism in our analysis and conclusions because, as previously noted, our evidence covers only a fairly narrow window of time and in many cases addresses only baseline and pre-program characteristics of end users. At the same time, however, our charge on this evaluation has been to provide early and continuing feedback to policy-makers on whether this program is inducing the changes that would be expected based on the program objectives and underlying program theory. Since this is the largest program in the 1998 portfolio, it is especially critical that this evaluation be as assertive and candid as possible.*
- *Third, and related to the conservatism mentioned above, the fact that we have summarized the strength of the evidence to date for several of the hypotheses as “not applicable” should not be construed as meaning there is no relevant baseline information or that this information is not useful for informing one’s opinion of the program. We have utilized “not applicable” under the strength column in the Summary Table for some hypotheses because we do not yet have adequate information to make a strongly defensible judgment. This is a conservatism that results from our objective of being as factually oriented as possible on the parts of this evaluation that require judgment rather than opinion. We, therefore, encourage readers to go beyond the summary part of this section. Each of the individual hypotheses is addressed in its own subsection and readers will find important baseline evidence for many of the hypotheses with “not applicable” under the strength column. The baseline evidence associated with these hypotheses is critically important to formulating an informed opinion about the program.*
- *Fourth, our participant re-interviews were conducted with 14 of the 22 interviewees included in the first-round interviews (all 22 were contacted). Although we believe these 14 adequately represent the diversity of EESPs in the Program, some Program effects may not have been captured.*

Table 10-2
Summary of Near-Term Market Effects Assessment of the 1998 NSPC

Hypotheses	Extent of Evidence to Date	Strength of Evidence to Date
EESPS		
1. <i>Development of improved marketing and sales skills</i>	Limited to baseline	Weak
2. <i>Changes in business strategies</i>	Moderate	Weak
3. <i>Energy-efficiency product and service innovation</i>	Weak	Weak
4. <i>Changes in breadth and depth of EESP industry</i>	Weak	Weak
5. <i>Improved M&V capabilities</i>	Moderate	Moderate
6. <i>Increased interest in the importance and viability of performance contracting as a long-term business strategy</i>	Moderate	Weak

(Continued)

Table 10-2 (continued)
Summary of Near-Term Market Effects Assessment of the 1998 NSPC

Hypotheses	Extent of Evidence to Date	Strength of Evidence to Date
CUSTOMER/END USER		
1. <i>Improved confidence in EESP as credible energy-efficiency service provider</i>	Limited to baseline	N/A
2. <i>Increased confidence in measure savings</i>	Limited to baseline	N/A
3. <i>Increased awareness and knowledge of the benefits of non-lighting energy-efficiency</i>	Limited to baseline	N/A
4. <i>Increase in role of energy-efficiency in energy-related procurement practices</i>	Moderate	Weak
5. <i>Increased demand for EE products and services, especially non-lighting</i>	Limited to baseline	N/A
6. <i>Increased knowledge and awareness of performance contracting</i>	Limited to baseline	N/A
OVERALL FOR PROGRAM	Limited to Moderate	Weak

Within the context of the caveats above, we believe that the overall weight of the evidence collected to date indicates that the 1998 program is generating few if any near-term market effects. As summarized in Table 10-2 and discussed in detail in each of the subsections, the strength of the evidence in support of the supply-side hypotheses is weak for five of the six hypotheses. In addition, in the one case where we have rated the evidence as moderate (for improved M&V capabilities), we are concerned about whether the capabilities developed to meet the program requirements are sustainable given the level of resistance to these requirements expressed by many EESPs.

On the end-use side, we have conservatively rated the strength of the evidence as “not applicable” for five of the six hypotheses because we have no longitudinal data. Nonetheless, even with only baseline data we were compelled to rate the strength of the evidence as weak for Hypothesis No. 4, *increase in the role of energy-efficiency in energy-related procurement practices*, because the participants already possessed the desired characteristics upon entry into the program; that is, there is virtually no room for the program to produce any significant change among participants because over 90 percent of them already have procurement practices that support rational energy-efficiency decision making. This same phenomenon in which a large portion of participants enter the program with the characteristics associated with affirming the hypothesis occurs for several other end user hypotheses. Although we have conservatively rated these “not applicable” as well, we must point out that the participants already possess the desired characteristics in proportions much higher than those found among average customers. This again limits the degree to which market effects can occur for among the 1998 cohort under even the best case scenario.

Another area of concern for the 1998 program is the estimated level of free-ridership. Because roughly half of the program savings may not be attributable to the program, an important question is begged: How likely is it that the program induces market effects if it is only partially effective at generating energy-efficiency projects that would not have been implemented otherwise? In

addition, if EESPs report that the program is not inducing significant changes in their business practices, this makes it less likely that end user market effects, which are hypothesized to follow from a sequence of events that starts with the hypothesized EESP changes, are also less likely to occur.

For all of the reasons above, our near-term assessment of the 1998 NSPC is that it has resulted in minimal market effects *to date*. Again, the four caveats above apply to this conclusion as well as the important fact that program implementation for 1998 is still in progress and the fact that important re-measurements of the baseline end user, participant end user, and participant and non-participant EESP indicators need to be made in the future. Nonetheless, the fact that there is minimal evidence for changes in EESP practices (EESP Hypotheses 1 through 3) attributable to the Program is of strong concern because, according to the program theory, these changes are first-order effects that are necessary to engender a number of the other hypotheses. In addition, these first-order EESP changes are critical to the sustainability of the hypothesized effects. Thus, the fact that the evidence to date for these hypotheses is weak jeopardizes the plausibility of the overall program theory.

10.2 EESP-RELATED HYPOTHESES

10.2.1 Development of Improved Marketing and Sales Skills

One of the possible effects of the NSPC program is that the program leads to improved marketing and sales practices on the part of EESPs. Two possible indicators of the first potential effect are *changes in marketing and sales practices, e.g., branding, advertising, marketing and changes in targeting that lead to reductions in transaction costs (more offers to under-served segments)*. The elements of the research conducted to date that can be used to assess these indicators on a near-term basis are the first- and second-round interviews of participant EESPs, the non-participant EESP interviews, and analyses of the make-up of participating end users.

The most direct information comes from our interviews with the participating EESPs. In both the first- and second-round participant EESP interviews we asked EESPs whether or not they had made any major changes in their marketing and sales practices and whether any changes in their business practices were attributable to their participation in the NSPC. In most cases EESPs indicated that they had not made major changes or that the changes they have made were not attributable to the program. There was a small number of EESPs that stated they were trying new sales methods, but whether they would be doing this without the program was not clear. There were also a few firms that stated the program had a positive effect on their business, however, the effect described focused on the program helping to *open doors* with customers (by using the program as a lead-in) or to its direct financial support of projects.

The early evidence associated with the second indicator, changes in targeting attributable to reduced transaction costs, is also weak. As discussed in Section 6 of this report, end users that participated in the 1998 program were similar to the largest, most sophisticated (with respect to investing in energy-efficiency) customers in the nonresidential population. This finding, coupled with the fact that no participant EESP reported using the aggregation feature of the program to

serve small customers, indicates that the 1998 program had little effect on targeting strategies and associated transaction costs. In addition, participant EESPs did not offer any examples of how the program had led to targeting efforts for historically under-served segments.

A summary of how the results of this first-year evaluation bear on the first EESP-related hypothesis is provided in Table 10-3.

Table 10-3
Summary of Findings Associated with EESP Hypothesis No. 1

Element	Description
Hypothesis	<i>1. Development of improved marketing and sales skills</i>
Indicators	Changes in marketing and sales practices - e.g., branding, advertising, marketing Changes in targeting that lead to reductions in transaction costs (more offers to under-served segments)
Key Sources	Participant EESP First- and Second-round Interviews Non-participant EESP Interviews Analysis of Participating End Users
Evidence to Date	Limited. Results on practices limited to self-reports. Most EESPs indicate few changes in marketing and sales practices and that those that have been made are not attributable to the program. A few participants did indicate they were trying some new sales methods but attribution to the program was not clear. Some EESPs already engaged in performance contracting indicate the program positively reinforces this aspect of their business; others not previously engaged in performance contracting indicate they are no more likely to make this model a priority. A few mentions of new leads with end users due to participation. End user participants in 1998 program tend to be large, sophisticated customers similar in profile to those to whom EESPs traditionally have marketed efficiency and performance contracting services. Baseline survey corroborates this finding. Thus, for 1998, no evidence that program led to targeting of under-served segments.
Overall Strength of Evidence in Supporting Hypothesis	Weak
Related Issues	Program only in operation 1 year. Some EESPs are reluctant to disclose marketing and sales methods. Other market dynamics, particularly, first-year of the California direct access market, are having stronger influence. Some participants state uncertainty and limited scale of 1998 program limited willingness of EESPs to make changes in response to program. Empirical observation of changes in closely held marketing and sales strategies is difficult in practice.

10.2.2 Changes in Business Strategies

A second EESP-related hypothesis, changes in business strategies, is related to the first but is characterized by different indicators. Somewhat by definition, these indicators are not known *a priori*. This is because a purpose of the program is to stimulate and support new business strategies that have not been thought of or, at least, previously observed in the marketplace. Two examples of such strategies that we developed as part of this evaluation are *successful bundling of both energy efficiency and energy commodity* and *operations and maintenance firms incorporating energy-efficiency guarantees into their traditional business*. Our intent with these examples is not to demonstrate prescience about the future of the market for energy-efficiency products and services, but simply to provide reasonable examples of the kinds of changes associated with this particular hypothesis.

Much has been written about the first example, bundling of electric commodity and energy efficiency, in terms of whether electric restructuring itself would lead to higher market share for firms employing this approach. Since the NSPC program directly promotes the energy-efficiency portion of the package, it is reasonable to investigate whether or not the NSPC might also play a role in shaping the market for such bundling. We believe, however, that the evidence to date associated with this indicator is currently weak. This is because only following: only three of the 1998 EESP participants offered electric commodity; none of these three participant EESPs reported any effect of the program in helping to win customers because of the advantage of bundling electric commodity and efficiency services; and none of the top four ESPs, in terms of market share of electric load, participated in the NSPC in 1998. In addition, results from the baseline surveys conducted in California indicate that those customers that switched electricity providers in 1998 did not use energy-efficiency services as a major criteria in their choice of their new provider (although they did consider such services important and expected their providers to demonstrate adequate efficiency-related capabilities).

There is also little evidence to date that the program has initiated any other major changes in business strategies of EESPs, although there is some anecdotal information. A few EESPs report that the program has led them to consider adding M&V services or to improve and expand their existing M&V capabilities (this is taken up under EESP-related hypothesis No. 5). In addition, although the vast majority of participant EESPs in the 1998 NSPC were traditional ESCOs or retail energy service providers, a few of the firms were engineering or controls firms for whom energy-efficiency services are just one part of their business. At the same time, however, we note that most of these firms appear to have strong pre-program credentials providing efficiency-related services, thus, although the program may reinforce existing efficiency-oriented business lines for these firms it can not be credited with creating them.

A summary of our first-year evaluation results associated with this second EESP-related hypothesis is provided in Table 10-4.

Table 10-4
Summary of Findings Associated with EESP Hypothesis No. 2

Element	Description
Hypothesis	2. <i>Changes in business strategies</i>
Indicators	Successful bundling of both EE and energy commodity O&M firms incorporate EE guarantee
Key Sources	Participant EESP First- and Second-round Interviews Non-participant EESP Interviews Interviews with Participating End Users Baseline End User Surveys
Evidence to Date	<p>Moderate. Evidence includes EESP self-reports of bundling, M&V, and role of NSPC. Additional evidence provided by comparison of whether firms with highest commodity market shares are program participants. Indirect evidence also from baseline end users' reports of relative importance of energy-efficiency to choice of electricity provider.</p> <p>EESPs report few changes in major business strategies and generally do not attribute those reported to the 1998 NSPC. However, some EESPs do report increased focus on M&V capabilities, which they do attribute to the program. A few EESP participants are engineering/contractor firms seeking to increase energy-efficiency portion of their business. No traditional HVAC O&M firms participated as sponsors in 1998.</p> <p>EESP self-reports indicate that there is no agreement as to whether bundling is being promoted successfully in the market. Only 3 of 22 participant EESPs sampled in first-round interviews reported providing electricity in addition to energy-efficiency services.</p> <p>None of the four ESPs estimated to have the largest nonresidential electric market shares were project sponsors in the 1998 NSPC, although some of their customers were self-sponsors.</p> <p>Results from the end user baseline survey in California indicate that energy-efficiency services generally were not used to differentiate between suppliers (guaranteed commodity savings and reputation were most important), although end users did expect their providers to possess capabilities in this area. In summary, though ESPs tried to drive customers toward decisions based on value-added services, most of the end user market preferred to keep electric commodity pricing as separate as possible from offers of other services such as energy efficiency.</p>
Overall Strength of Evidence in Supporting Hypothesis	Weak
Related Issues	Program only in operation 1 year. Firms with largest electric commodity shares chose not to participate directly in program. Other market dynamics, particularly, first-year of the California direct access market, are having stronger influence. Some participants state uncertainty and limited scale of 1998 program limited willingness of EESPs to make changes in response to program.

10.2.3 Energy-Efficiency Product and Service Innovation

The indicators related to this hypothesis were not known *a priori* since we could not predict the innovations that might conceivably be caused by the Program. In Table 10-1, we suggested several indicators. The first was an increase in the number and type of energy-efficiency products and services. We have interpreted this to mean encouraging investments in emerging technologies or even in measures, such as HVAC, which have been installed less frequently in traditional utility DSM programs than other measures such as lighting. The second indicator was the expansion and innovation of performance contracting: *this indicator is now addressed under EESP Hypothesis No. 6*.

The data to test this hypothesis draw on first- and second-round interviews with participating EESPs, interviews with the non-participant EESPs, and interviews with utility administrators. As in the case of the first two hypotheses, the most direct information comes from our interviews with participating EESPs.

The interviews revealed little information on the installation of emerging technologies. This was partly due to various interpretations of “new products and services.” Most EESPs interviewed indicated that they had not offered any major new products and services attributable to the program. One could attempt to answer this question by examining the utility Program tracking databases. Unfortunately, the Program applications that contain the necessary technology-level detail have not been thoroughly examined to determine whether any of the measures installed could be considered emerging. This is perhaps a task that needs to be included in future market transformation studies.

However, there is some anecdotal evidence in support of this hypothesis. One engineering firm that was contacted is not engaged in performance contracting work but is aware of the NSPC program. The firm is engaged in R&D activities for innovative cooling technologies and plans to make use of the NSPC program in the future as appropriate. While they view the NSPC program as being most suitable for the application of “proven” technologies, they hope to take advantage of the availability of NSPC funding as their technology applications become proven and more widely acceptable. While this is an isolated instance, it nevertheless serves to highlight the possibility that the NSPC program could play a potentially valuable role in the commercialization of technologies arising from state and privately funded R&D efforts. Another example was provided by some utility administrators who thought that the Program may have allowed for more innovative applications than traditional rebate programs, particularly among industrial customers. However, there is no way to determine whether the degree of innovation is greater than what has occurred in custom applications in industrial rebate programs.

HVAC systems have been less frequently installed in rebate programs than lighting measures. The design of the Program was meant to redress this imbalance in a very direct and effective manner by providing greater incentives for HVAC measures. To date, a comprehensive set of program tracking data has not been made available to the evaluation team, thus, we have not been able to quantitatively assess whether the 1998 NSPC is resulting in a higher proportion of non-lighting

savings than previous prescriptive or customer rebate programs. The partial program data that we assessed on a statewide as of Fall 1998 indicated that at least a 37 percent of the savings for two of the three utilities were from non-lighting measures. If borne out, this percentage would likely be shown to be higher than the percentage normally occurring in prescriptive rebate programs in the State (though not necessarily more, and perhaps less, than custom rebate programs).

A summary of how the results of this first-year evaluation bear on the third EESP hypothesis is provided in Table 10-5.

Table 10-5
Summary of Findings Associated with EESP Hypothesis No. 3

Hypothesis	3. Energy-efficiency product and service innovation
Indicators	<p>Initial Indicators</p> <p style="padding-left: 40px;">Increased in the number and type of EE products and services</p> <p style="padding-left: 40px;">Expansion and innovation of performance contracting (now incorporated into EESP Hypothesis #6, see Section 10.1.6)</p> <p>Revised Indicators</p> <p style="padding-left: 40px;">Increased installations of emerging technologies</p> <p style="padding-left: 40px;">Increased installations of measures less frequently installed through traditional utility rebate programs</p>
Key Sources	<p>Participant EESP First- and Second-round Interviews</p> <p>Non-participant EESP Interviews</p> <p>Utility Administrator Interviews</p>
Evidence to Date	<p>Weak.</p> <p>Only anecdotal evidence exists that emerging technologies have been installed or may be installed in the future</p> <p>HVAC measures may have been more frequently installed than in past prescriptive rebate programs</p>
Overall Strength of Evidence in Supporting Hypothesis	Weak.
Related Issues	<p>Program only in operation for one year.</p> <p>Future evaluations may need to examine the program applications at the measure level to determine whether installations of emerging technologies increase.</p>

10.2.4 Changes in Breadth and Depth of EESP Industry

In Table 10-1, we suggested several indicators. The first two indicators are concerned with depth while the third is concerned with breadth. The first indicator is an *increase in the number of EESPs*. This could mean the creation of *new* EESPs or simply attracting *existing* EESPs into the State. The second indicator is an *increase in the market share relative to other firms that do not actively promote or incorporate energy-efficiency into their products and services*. The third indicator is an *increase in the number of EESP types*. Having breadth increases the chances that the unique needs of any given customer will be met.

The second and third indicators are relevant to the wide class of potential EESPs that includes contractors, A&E firms, O&M firms, and the like, that is, companies who identify their business orientation around energy-using equipment but not energy efficiency. To the extent that these kinds of companies increase their focus on energy efficiency and this focus is rewarded with increased market share relative to their direct competitors, the pool of EESPs will increase both in number and in depth. The ranks of EESPs would then increase by including more firms that have other closely related reasons to interact with customers besides energy efficiency. This could be especially important for those customers for whom transaction costs relative to savings potential has limited offers from traditional ESCOs and retail energy service providers.

The first point to be made is that the evidence to date is weak for all indicators. The *baseline* data for the three indicators is weak or non-existent. With respect to market effects based on self reports, most participating EESPs stated that the NSPC program was too small to affect the market and that there have been too few projects actually implemented to date to lead to any market effects.

Increase in the Number of EESPs

First, there is little data that accurately describes the *current* population of EESPs and their various types, and their relative market shares. These points have been recently underscored in a study conducted by Easton Consultants and Feldman Management Consultants (EC&FMC, 1999) for the Energy Center of Wisconsin and the New York State Energy Research & Development Authority. In this study, the authors state: “Unfortunately there are no reliable estimates of the size of the competitive energy efficiency markets nationally, nor of the subset composed of services delivered by ESCOs” (p. 5). Said another way, there is no comprehensive and reliable population frame from which to draw a statistically representative sample of EESPs, or even more narrowly, traditional ESCOs. Thus, when we constructed the sample frame for non-participating EESPs (both California and non-California) for use in this study, we drew on the following sources:

- lists of registered ESPs from on the California PUC website,
- NAESCO membership directories,
- Dun & Bradstreet’s MarketPlace databases,

- a list of firms requesting to obtain request for proposals from the Federal Energy Management Program (FEMP), and
- a list of EESPs obtained from end users in our baseline survey who were asked to name EESPs of which they were aware on an unaided basis.

Using these data, we estimate that the number of traditional ESCOs and retail energy service providers (that provide efficiency services in addition to electric commodity) serving California to be in the range of 30 to 70, depending in large part on how one defines an ESCO. We are reasonably confident that this represents a good approximation of the population for ESCOs serving California since this range number is consistent with an estimate made by the California Energy Commission in 1998 that 58 companies in the state provide comprehensive performance contracting services

In our opinion, the exact number of ESCOs and retail ESPs is less important than the general issues of whether there are enough firms to serve the market demand competitively and whether any firm or small group of firms have market power. We believe that the information developed in this study confirms that market power is not an issue within the current performance contracting and energy-efficiency services industries in California and that there is an adequate mix and diversity of firms in the market. For example, the market share of firms providing performance contracting services was found to be extremely diluted among a variety of different entities (see Section 5.4.5). This is not to say that there are not important trends that require close monitoring to ensure the situation does not reverse or unravel. For example, we know that there has been an increase in merger and acquisition (M&A) activity associated with retail energy service companies and traditional ESCOs over the past year, driven principally by electric industry restructuring. Examples of this M&A activity includes SEMPRA's purchase of CES/Way, On-Site's purchase of Sycom, Duke's purchase of Energy Investments Inc., Proven Alternative's purchase of Entergy's ESCO, and Enron's purchase of the Bentley Company. This consolidation trend should be monitored with respect to whether unhealthy levels of consolidation occur, we do not believe there is any evidence that this is the case currently and it is equally likely that the consolidation to date could increase the health of the energy services industry by combining the experienced sales and delivery expertise of ESCOs with the greater financial muscle of retail energy service providers affiliated with utilities or funded privately (often through venture capital).

Increase in the Market Share Relative to Other Non-EE Firms

As stated under EESP Hypothesis No. 2, there is no compelling evidence that retail energy service providers that also provide energy-efficiency services have garnered incremental market share because of those services. We have even less information when it comes to assessing whether contractors, A&E firms, and O&M firms are garnering any incremental market share relative to their competitors as a result of the program intervention. We do know, however, that there were not very many non-ESCO/non-ESP participants in the 1998 program who had limited pre-program experience with energy-efficiency and performance contracting. As discussed in the Recommendations section of this report, we believe that additional studies are required to track

the role of energy-efficiency in changing market shares within specific supply-side markets (e.g., HVAC contractors) are necessary to assess this question over time.

Increase in the Number of EESP Types

Recall that we had developed a typology consisting of three types of EESPs.

- **ESCO/Retail:** This group is defined to include firms that focus on electric commodity in addition to demand side services. We also refer to this group as retail energy service providers.
- **ESCO/Traditional:** This group includes companies generally considered traditional ESCOs, generally by their own definitions or those of other industry observers.
- **Contractors/Engineers:** This category includes firms that would typically provide energy efficiency services as an adjunct to other professional services. This group includes engineering design firms, contractors, O&M firms, and firms specializing in energy controls.

Although some respondents thought that the NSPC could bring the efficiency industry to a higher level, a more common perception was that the program was designed to benefit the traditional ESCO model only, and did not necessarily meet the needs of other business models within the evolving energy-efficiency services industry. These respondents expressed the opinion that the paperwork requirements, M&V, project size threshold, and other features of the program did not work for them. Again, as we discuss in our Recommendations section, complementary studies are needed to more thoroughly assess whether the mix of firms providing energy-efficiency products and services is changing in ways that are attributable to the NSPC and other California program interventions. Again, in order to effectively assess this hypothesis, future research is needed to compare to our initial information on the different types of EESPs currently operating in California and participating in the 1998 NSPC.

While the baseline for traditional and retail ESCOs was reasonably robust, the baseline for contractors/engineers was quite weak. This lack of information for the contractors/engineers is consistent with our original scope of work. To have constructed a more robust baseline for contractors/engineers would have required a disproportionate share of project resources. A more focused effort that addresses this group is needed and could be incorporated into a future statewide study.

A summary of how the results of this first-year evaluation bear on the fourth EESP hypothesis is provided in Table 10-6.

Table 10-6
Summary of Findings Associated with EESP Hypothesis No. 4

Element	Description
Hypothesis	<i>4. Changes in the breadth and depth of EESP industry</i>
Indicators	<p>Increase in # of EESPs</p> <p>Increase in the market share relative to other non EE firms</p> <p>Increase in the number of EESP types</p>
Key Sources	<p>Participant EESP First- and Second-round Interviews</p> <p>Non-Participant EESP Interviews</p> <p>ESCO Market Research Study (Easton and Feldman, 1999)</p>
Evidence to Date	<p>Weak. Given the sparse data, the short-term impacts appear to be minimal. EESPs state that they believe the NSPC is too small to have had any immediate effects. They also state that the current structure of the Program tends to favor the traditional ESCOs thus limiting the diversity of EESPs.</p> <p>Program tracking data shows traditional ESCOs and ESPs obtained the majority of incentives. A number of engineering/contractor firms did participate as well, however, examination of these firms indicate most of them provided energy-efficiency or performance contracting services prior to their participation. To the extent that these services are relatively nascent, the program may play a positive role in re-enforcing these practices.</p> <p>End user baseline results show that the market share of performance contracting is diffused among a large number of firms, none of which are dominant.</p>
Overall Strength of Evidence in Supporting Hypothesis	Weak
Related Issues	<p>The objective of increasing the number and types of EESPs may not be critical since there is evidence that the supply and mix of EESPs is adequate to meet current customer demand for energy services. This claim is supported by the fact that customers did not report finding it difficult to identify such ESCOs and contract for their services to meet their needs at a reasonable price.</p> <p>Because of the number of supply-side markets involved in serving end users, future studies focusing on market shares <i>within</i> specific supply-side markets are likely to be needed to complement this and future evaluations of the NSPC.</p> <p>Moreover, there are other restructuring-driven trends that may have a significant impact on the number and mix of EESPs, as well as their relative market shares in California. These policies and effects must be tracked and assessed as part of any future evaluation of the NSPC.</p>

10.2.5 Improved M&V Capabilities

In table 10-1, we suggested several indicators. The first was an increase in the number of EESPs doing their own M&V. The extent to which EESPs choose to conduct the M&V function in-house may be an indicator of lower resistance to the M&V requirements leading to the increased likelihood that this effect will be sustainable. The second was improved knowledge and capability of conducting M&V. The third was an increase in M&V innovations. The data to test this hypothesis draw on first- and second-round interviews with participating EESPs, re-interviews with utility administrators, interviews with participating end users.

The NSPC has led to the development of an in-house M&V capability in the majority of cases. However, some EESPs noted that if many new projects come through, they might need to subcontract for some of the M&V. One noted that they plan to subcontract out the M&V regardless. Utility administrators noted that they do not provide a significant amount of support to EESPs during the application or M&V processes. One administrator noted that the program appears to be stimulating a secondary market to support participation in the program – sometimes working with sponsoring EESPs, and sometimes providing more limited special assistance in areas such as application preparation and M&V design/implementation.

Thus, the results are mixed. Some EESPs are developing new M&V expertise in response to the NSPC while others are contracting out the M&V to the extent that a secondary M&V market may be created.

Many EESPs have enhanced their M&V capabilities to serve the Program and some participating EESPs noted these were “new skills.” However, at least one EESP felt that their M&V focus had been evolving away from billing analysis to more measure specific monitoring, but that this was not in response to the NSPC.

There is at least one case in which the improved M&V capability may be spilling over into other arenas. One EESP report that now that they can do M&V, one firm has incorporated their experiences into out-of-state projects. One benefit of this and previous bidding programs is that this company has had an opportunity to stock the necessary equipment and minimize future M&V costs while using the M&V capability as a sales tool with risk-averse customers. To the extent this M&V capability constitutes a competitive edge, other EESPs operating in this out-of-state market may respond by acquiring the same M&V skills. Clearly, EESPs have numerous complaints about the M&V requirements, however, many have developed the in-house expertise and some even see the benefits of doing so.

Examples of M&V innovation could be the development of new types of less expensive metering and monitoring equipment, more cost effective sampling strategies which require smaller samples that are able to achieve the same level of precision, or other enhancements to traditional M&V approaches. We did not obtain any claims of such innovation occurring as a result of the program. There is some tension around this issue, however, in that some EESPs believe the program administration rules require a single, overly strict approach to M&V, thereby limiting innovation.

Motivated by a significant amount of EESP and customer feedback, utility administrators report that they are continuing their efforts to simplify the M&V requirements and note changes were made to the PY99 requirements. Documentation is being developed for specific measures, including spreadsheet-based forms that will make the M&V process easier to complete and case study examples. These changes in the M&V protocols may lessen the resistance to M&V requirements. However, if such changes do not reduce EESP resistance, then one must question the sustainability of this effect. A summary of how the results of this first-year evaluation bear on the fifth EESP hypothesis is provided in Table 10-7.

Table 10-7
Summary of Findings Associated with EESP Hypothesis No. 5

Element	Description
Hypothesis	<i>5. Improved M&V Capabilities</i>
Indicators	Increase in # of EESPs doing own M&V Improved knowledge and capability v-a-v M&V Increased M&V innovation
Key Sources	Participant EESP First- and Second-round Interviews Utility Administrator Re-interviews Interviews with Participating End Users
Evidence to Date	<p>Moderate. Principal results from participant EESP self-reports and administrators' observations. Program likely to increase demand for M&V, but the value M&V as defined by program is widely disputed.</p> <p>One administrator noted that the program is stimulating a secondary market to support participation in the program – sometimes working with sponsoring EESPs, and sometimes providing more limited special assistance in areas such as application preparation and M&V design/implementation.</p> <p>Several participant EESPs report that the NSPC led to in-house M&V, many with newly enhanced capabilities to serve the program. Some noted that if many new projects come through, they might need to subcontract some of the M&V. Another noted they planned to subcontract M&V regardless. Some noted these were “new skills.”</p> <p>Equally strong camp of participant and non-participant EESPs stating that the M&V requirements are totally out-of-sync with what the market needs and wants and that the program simply promotes traditional ESCOs and performance contracting</p> <p>Ten of 15 self-sponsor end users interviewed stated that they will be utilizing an outside firm for some or all of the M&V work. The remainder said they would be doing the M&V work in-house.</p>
Overall Strength of Evidence in Supporting Hypothesis	Moderate
Related Issues	Program may be inducing a change among participants, however, much less clear is whether this change is sustainable because of the strong position held by many firms with strong market positions that required M&V levels are overkill and counter-productive.

10.2.6 Changes in the Supply-Side Market for Performance Contracting

The original hypothesis was: *Increased knowledge and awareness of performance contracting.* However, upon further consideration, we concluded that because the concept of performance contracting had been around for a relatively long period of time, establishing the creation of this awareness and knowledge as a program assessment objective made little sense. We believe that nearly all the traditional ESCOs and retail energy service provider EESPs, as well as a number of the larger engineering and contracting firms were already aware and knowledgeable of performance contracting. Given this awareness and knowledge, we believe a more useful objective is: *Increased interest in the importance and viability of performance contracting as a long-term business strategy.* This change required that we replace the original indicator stated in Table 10-1 with the following two: (a) *Increase in number of EESPs promoting and offering performance contracting,* and (b) *Increase in market share of performance contracting.*

The data to test this hypothesis draw on participant EESP first- and second-round interviews, non-participant EESP interviews, interviews with participating end users.

Increase in Number of EESPs Promoting and Offering Performance Contracting

Virtually all participant EESPs felt that the NSPC had not had an impact on the performance contracting market. Several specifically noted that the lack of impact was primarily due to the fact that the program was too small, and because the program had taken a year to get projects going. With respect to whether the naturally-occurring market for performance contracting is increasing or decreasing, there was no consensus among EESPs whatsoever. Not unexpectedly, firms for whom performance contracting is a major part of their business generally perceive the market as stable or growing, while those firms (both participants and many non-participants) that do not consider it core believe the market favors less complex fee-for-service type arrangements.

Two participant EESPs felt that the market had been moving away from performance contracting toward fee-for-service work, but that the NSPC Program was trying to revive this form of contracting (undesirable, from their viewpoint) to benefit the traditional ESCOs. Thus, besides traditional ESCOs, most participant and non-participant EESPs see performance contracting as a niche marketing approach that lacks the potential for much growth outside of its traditional markets.

Among non-participating EESPs, perspectives on performance contracting vary considerably within the industry. While some of the non-participants continue to pursue this business area, others have discontinued it as a primary business focus.

Participating end users can also provide information regarding the promotion of performance contracting. Reasonable indicators are the extent to which participant end users are aware of performance contracting and have been approached by EESPs offering performance contracts. Sixty one percent of the participant end users indicate that they are familiar with performance contracting while over half (56%) were approached with offers. However, while suggestive, these data do not allow one to determine how many different EESPs made these offers over time.

Thus, the evidence suggests that the Program may not yet have stimulated more EESPs to move into performance contracting.

Increase in Market Share of Performance Contracting

Slightly less than half of participating EESPs report that performance contracting is their most important business area. However, on a percent of projects basis, performance contracting is reported to represent about one-third of activity. Among non-participating EESPs who are already relying less on performance contracting than participating EESPs, there is a great deal of ambiguity regarding the future of performance contracting. While some larger firms note that they are pursuing this business area quite actively, others have pulled out and are forging long-term customer relationships through other avenues.

This might lead one to conclude that the Program has induced participating EESPs to increase their use of performance contracting. However, participating EESPs reported no major differences between the types of contracts initiated with clients under the NSPC Program versus those negotiated with customers outside the Program. This suggests that EESPs that chose to participate in the Program relied more on performance contracting prior to the Program compared to those EESPs who chose not to participate. In other words, EESPs that had a greater tendency to engage in performance contracting may have self-selected into the Program.

A summary of how the results of this first-year evaluation bear on the sixth EESP hypothesis is provided in Table 10-8.

Table 10-8
Summary of Findings Associated with EESP Hypothesis No. 6

Element	Description
Hypothesis	<p>Original hypothesis: <i>6. Increased knowledge and awareness of performance contracting</i></p> <p>Revised hypothesis: <i>6. Increased interest in importance and viability of performance contracting as long-term business strategy</i></p>
Indicators	<p>Original Indicator:</p> <p style="padding-left: 40px;">Increase in measured awareness of performance contracting and ability to identify features among EESPs</p> <p>Revised Indicators:</p> <p style="padding-left: 40px;">Increase in number of EESPs promoting and offering performance contracting</p> <p style="padding-left: 40px;">Increase in market share of performance contracting</p>
Key Sources	<p>Participant EESP First- and Second-round Interviews</p> <p>Non-participant EESP Interviews</p> <p>Interviews with Participating End Users</p>
Evidence to Date	<p>Moderate. Principal results from participant and non-participant EESP self-reports.</p> <p>Participant EESPs report that approximately one-third of their contracts with participant end users are performance contracts. They report that about the same fraction of their contracts with customers outside the program are also performance contracts.</p> <p>Besides traditional ESCOs, most participant and non-participant EESPs see performance contracting as a niche marketing approach that lacks the potential for much growth outside of its traditional markets.</p> <p>Traditional ESCO participants see the program as supporting their business model. A larger and probably more strongly positioned set of EESPs believe that the program unproductively promotes traditional ESCOs and performance contracting in ways that have little to do with market transformation. These firms believe the program supports firms and products that otherwise face limited or declining markets.</p>
Overall Strength of Evidence in Supporting Hypothesis	Weak
Related Issues	<p>The 1998 market for nonresidential energy services was affected by significant changes associated with utility restructuring in California. The market for such services and the make-up of firms providing them are in flux. EESPs are composed of at least three principal groups: retail energy service providers, traditional ESCOs, and Other (A&E firms, contractors, O&M firms, etc.). Opinions on performance contracting differ widely between groups. To date, firms for whom performance contracting is not their principal contracting mechanism seem unconvinced by the NSPC to make it so.</p>

10.3 END USER-RELATED HYPOTHESES

In this subsection we discuss how the information developed during this first-year evaluation bears on the end user hypotheses developed earlier in the project and presented in Section 4. This subsection will tend to focus more on what we have learned from the baseline surveys with respect to how useful and measurable the hypotheses are, than it will on whether we have evidence for *changes* in the associated indicators. This is because, as we discussed in the introduction to this section, the primary information sources for the end user analysis are surveys conducted early in the program intervention process for which we do not yet have longitudinal results.

10.3.1 *Improved Confidence in EESPs as Credible Energy-Efficiency Service Providers*

As discussed in the Section 4, one of the key objectives of the NSPC program is to increase the amount of energy-efficiency business that customers engage in directly with EESPs. In particular, the program seeks to encourage end users to work with EESPs early in the energy-efficiency project development cycle, for example, to obtain general information on efficiency opportunities, receive formal audits and savings analyses, and, finally, to receive project proposals. These critical front-end aspects of the project development cycle have historically been fulfilled for many end users in California by their regulated utilities as part of traditional DSM programs.

An hypothesis of this study was that, as of the beginning of 1998, the majority of nonresidential customers considered their regulated utility to be one of the, if not the most, credible sources of energy-efficiency related information and, equally important, that most customers were far less trusting and comfortable with non-utility providers such as traditional ESCOs, newly emerging retail energy service providers, contractors, A&E firms, and equipment manufacturers. Based on the preceding assumption, a key hypothesis for how the program might change the existing dynamic is that it leads to improved confidence in EESPs as credible energy-efficiency service providers. For this hypothesis we then developed three initial indicators of whether a change may have occurred in the baseline levels of confidence: (a) *Increased credibility rating of EESPs relative to utilities*, (b) *Reduced reliance on regulated utilities for EE services*, and (c) *Increase in incidence of repeat customers for EESPs*.

As with the majority of the end user hypotheses, we do not yet have the information required to assess whether any changes in the associated indicators have yet occurred. We do have, however, a strong set of data sources for assessing the baseline component of the hypothesis which, in turn, provides us with a basis for identifying important issues that must be considered and addressed as part of future measurement activities. The principal primary information sources bearing on this first end user hypothesis are: Interviews with Participating End Users, Baseline End User Surveys, and Utility Administrator Re-interviews.

A summary of the results from these sources that are relevant to the baseline indicators discussed above is provided in Table 10-9. Results from the baseline surveys confirm the initial assumption behind this hypothesis: regulated utilities are still considered the most highly rated source of

efficiency-related information and are the overwhelming choice of end users with respect to who they would call first for such information and non-utilities are not well-regarded with respect to provision of the same information. End users consider A&E firms the next most credible source of information after utilities. All other EESPs are rated significantly lower. Participant customers do not appear to be as reliant on utilities and tend to rate non-utility providers higher. As stated in the summary table, however, differences in our results between participant interviews and baseline surveys should not be considered program effects because participants were interviewed early in the program intervention process (i.e., generally before DPAs had been submitted and approved and in all cases before installation and M&V). For this reason, we consider the participant results to be closer to *pre*-program than *post*-program characteristics. This view is reinforced by the exceptionally close correspondence between the efficiency-related practices and policies of participants and their Stratum 4 peers in the baseline population, which is reported on in the remainder of this section and in Section 6.7.

Another indicator that validates the importance of the initial hypothesis is the reported score from the baseline surveys associated with the reliability of information provided by EESPs. Uncertainty over information provided by EESPs was the highest rated barrier along with performance uncertainty, both 6.2 on 0 to 10 scale (the difference between these scores and the lower scores for the other barriers are statistically significant at the 95% confidence level).

With respect to the incidence of repeat customers that might occur as a result of the program, baseline results are inconclusive. Participant EESP interviews indicated that two-thirds of NSPC projects were with existing customers and one-third were with new, however, with only one temporal data point, we do not know if this level of repeat business is different from normal. We asked end users a related prospective question on whether they planned to use the third-party firms involved in their NSPC projects again in the future. Twenty of 33 participant end users interviewed said they did plan to use third-party firms involved in the NSPC projects again in the future, however, of the non-sponsor end users, about half (8 of 15) said yes, while the remainder generally reported they did not know. We should also point out that this question was asked early in the implementation process and that non-sponsor respondents were speaking speculatively and generally felt they would have to wait and see how their experience went.

Finally, we note that changes in the indicators on *reduced reliance on regulated utilities for energy-efficiency services*, are at least partly due to the changes in the PY98 program implementation rules themselves. For example, utility energy audits were no longer available for large customers (with demand greater than 500 kW) in 1998. We also note that the utility administrators all reported that they are intentionally not doing any work for applicants as part of the NSPC approval process. This is sometimes a fine line in that administrators must work with applicants closely to communicate with them about the specific ways in which their applications may not be acceptable without actually telling applicants what to do. As discussed in Sections 7 and 8, there is some tension in this process between “doing the work for” an applicant and providing enough direction to obviate the applicants “guessing” what it is the administrator is looking for. The fact that there was some tension reported by EESPs tends to reinforce the veracity of the administrators’ assessment that they have been very hands off with respect to providing consulting support, at least with respect to non-customer applicants. An issue for future

measurement is that because customers are finding out they can not call regulated utilities for certain types of efficiency-related services, they may report a decrease in this indicator even if their preference is otherwise.

Table 10-9
Summary of First-Year Results Associated with End User Hypothesis No. 1

Element	Description
Hypothesis	<i>1. Improved confidence in EESPs as credible energy-efficiency service providers</i>
Indicators	<p>Increased credibility rating of EESPs relative to utilities</p> <p>Reduced reliance on regulated utilities for EE services</p> <p>Increase in incidence of repeat customers for EESPs</p>
Key Sources	<p>Interviews with Participating End Users</p> <p>Baseline End User Surveys</p> <p>Utility Administrator Re-interviews</p>
Evidence to Date	<p>Limited, mostly baseline.</p> <p>Baseline survey results indicate customers currently rate utilities as most credible (mean score of 7.4 on 10 point scale). A&E firms are next most credible (6.6), followed by equipment manufacturers (6.2), with most of remaining entities scoring 5.5 to 5.7 (e.g., ESCOs, ESPs, contractors, and O&M firms).</p> <p>Participant customers give higher credibility ratings than the baseline average to all firm types other than regulated utilities and O&M firms, which they score the same as the baseline average.</p> <p>The credibility gap widens when evaluated from the perspective of whom baseline customers say they would “call first” for efficiency-related help with 65% of respondents choosing their regulated utility, the next highest mention being A&E firms at 14%, and all others below 5%. The baseline results for large, Stratum 4 customers were: regulated utility 50%, A&E firms 33%, and 5% or less for each of the others types.</p> <p>A much lower percentage of participant customers state they would call regulated utilities first. Only 35% of participants say they would call utilities first for efficiency support, while 21% said A&E firms, 21% manufacturers, and 15% ESCOs.</p> <p>Uncertainty over information provided by EESPs was the highest rated barrier along with performance uncertainty (both 6.2 on 0 to 10 scale).</p> <p>Participant EESP interviews indicated 2/3rd of NSPC projects were with existing customers and 1/3rd with new. Twenty of 33 participant end users interviewed said they plan to use third-party firms involved in the NSPC projects again in the future.</p> <p>The program design itself reduces the customers’ reliance on utilities for energy efficiency services because, for example, utilities ceased to provide audits to their large customers (>500kW) in 1998.</p>

(Continued)

Table 10-9 (continued)
Summary of First-Year Results Associated with End User Hypothesis No. 1

Element	Description
Overall Strength of Evidence in Supporting Hypothesis	N/A , no change in indicators available yet.
Related Issues	<p>Follow-up measurements to these first-year results are necessary to determine whether any change in these indicators occurs. Measuring the relative credibility of and preference toward alternative service providers is expected to be fairly straightforward.</p> <p>Difference between end user participants and baseline results should not be interpreted as program effects because the participants were interviewed early in the implementation process and because they may have self-selected into the Program based on their characteristics.</p>

10.3.2 Increased Confidence in Measure Savings

Another important hypothesis is that the Program would lead to an increase in end users confidence in the accuracy of savings estimates associated with energy-efficiency measures. The original indicator of this hypothesis that we presented in Section 4 was stated as: *increased confidence in expectations of measure savings*. With the benefit of now having conducted the baseline measurements and having further considered this hypothesis, we have revised this indicator above somewhat so that it more closely aligns with the specific phrasing in our survey instruments and we have added three additional indicators. The revised and new indicators are:

- Reduction in reported significance of uncertainty over whether actual savings will be equal to estimated savings (among participants and broader nonresidential population)
- Satisfaction with M&V results among participant customers
- Use of positive M&V results within participant organizations to “sell” additional investment in efficiency projects
- Dissemination of positive M&V results within participant end users’ peer groups

With respect to the first indicator, reduced uncertainty over estimated savings, we can only report baseline indicators at this stage of the evaluation process. As mentioned in the previous subsection, the baseline survey results indicate that on average, performance uncertainty and uncertainty over information provided by EESPs are the highest rated barriers. This serves at least to validate somewhat the assumed importance of this barrier within the Program’s key objectives. Participants and Stratum 4 baseline survey respondents also rate these two barriers the highest, although their actual scores for all of the barriers are significantly lower than the average scores.

The only other information currently available with respect to the first indicator above are anecdotal reports from utility administrators. In our March 1999 re-interviews with the administrators a couple of mentions were made of cases in which end user participants indicated

to administrators that they expected to use the M&V results from their projects to convince their managers of the validity of savings claim and associated value of efficiency projects.

The new indicators that we have added all involve follow-up measurements with participant end users after they have obtained results from the M&V aspect of the program. The first issue to consider will be whether end user participants are satisfied with their M&V results and, if so, whether they attempt to and are able to use these results to convince their organizations to pursue additional efficiency projects. Equally important will be to assess whether satisfaction with the M&V results disseminates beyond the end user participants themselves to their peers or other end users in the general population. This dissemination could be driven by either the participant customers themselves, EESPs, or both.

It is important to note that the estimated net-to-gross ratio indicates that slightly more than half of the projects would not have occurred in the absence of the Program. This in turn suggests that these non free riders will be exposed to M&V activities to which that they would not have been otherwise exposed. As a result of this exposure, it is possible that any uncertainty surrounding the savings claims may be reduced. Of course, these data cannot be collected until the customers have had an opportunity to be exposed to the results of the M&V activities. Even in the case of 100 percent free ridership, the customers will have been exposed to more rigorous M&V simply because the Program requires it. This level of rigor is far beyond what EESPs usually conduct for customers outside the Program.

A summary of how the results of this first-year evaluation bear on the second end-user hypothesis is provided in Table 10-10.

Table 10-10
Summary of First-Year Results Associated with End User Hypothesis No. 2

Element	Description
Hypothesis	2. <i>Increased confidence in measure savings.</i>
Indicators	<p>Original indicator:</p> <p style="padding-left: 40px;">Increased confidence in expectations of measure savings</p> <p>Revised Indicators:</p> <p style="padding-left: 40px;">Reduction in reported significance of uncertainty over whether actual savings will be equal to estimated savings (among participants and broader nonresidential population)</p> <p style="padding-left: 40px;">Satisfaction with M&V results among participant customers</p> <p style="padding-left: 40px;">Use of positive M&V results within participant organizations to “sell” additional investment in efficiency projects</p> <p style="padding-left: 40px;">Dissemination of positive M&V results within participant end users’ peer groups</p>
Key Sources	<p>Interviews with Participating End Users</p> <p>Baseline End User Surveys</p> <p>Utility Administrator Re-interviews</p>
Evidence to Date	<p>Limited, mostly baseline.</p> <p>In the CA baseline survey, performance uncertainty and uncertainty over <i>information provided</i> by firms proposing efficiency-related projects were the two highest rated obstacles to making cost-effective efficiency improvements (both 6.2 on 0 to 10 scale). Among participants, the scores were lower (5.2 and 5.6) but still higher than those reported for other barriers.</p> <p>Utility administrators report a couple of cases in which their conversations with customers indicated the customer was planning to use M&V results to demonstrate validity of efficiency savings claims to their management.</p>
Overall Strength of Evidence in Supporting Hypothesis	N/A , no change in indicators available yet.
Related Issues	<p>Follow-up measurements to these first-year results are necessary to determine whether any change in these indicators occurs.</p> <p>New measurements will be needed in any follow-up study that focus on satisfaction with and use of M&V results within participant organizations and dissemination to their peers.</p> <p>Difference between end user participants and baseline results should not be interpreted as program effects because the participants were interviewed early in the implementation process and because they may have self-selected into the Program based on their characteristics.</p>

10.3.3 Increased Awareness and Knowledge of the Benefits of Non-Lighting Energy-Efficiency Savings Opportunities

Research conducted between 1996 and 1998 under the direction of the CADMAC Market Effects Subcommittee indicates that utility DSM programs in the 1990s have been more effective in transforming parts of the commercial lighting market than other end use markets in the nonresidential sector, such as HVAC. One way in which the 1998 NSPC program design sought to address this discrepancy was by utilizing different incentive levels for different end uses, namely, 7.5 cents/kWh saved for lighting, 21.5 cents for HVAC, and 11 cents for Other. The goal of this approach as well, as other aspects of the design, is to stimulate higher proportions of HVAC and Other projects, as compared with Lighting, than have been observed in past utility incentive programs. Associated with this approach is the hypothesis that the program will then also lead to an increase in awareness and knowledge of the benefits of non-lighting energy-efficiency savings opportunities.

As with most of the other end user hypotheses, the information available to date is most applicable to the baseline component of the associated indicator. Baseline survey respondents and end user participants were asked to rate their organization's knowledge of energy savings opportunities for lighting, HVAC, and Other on a 0 to 10 scale, with 0 being completely uninformed of savings opportunities and 10 completely informed. As shown in the summary table for this hypothesis, Table 10-10, baseline respondents in California rated their knowledge of lighting higher than HVAC and Other. The difference between the lighting score of 5.9 and the HVAC score of 5.4 is statistically significant at the 95% level, while the difference between lighting and Other (at 5.5) is significant at the 90% level. Not surprisingly, Stratum 4 baseline respondents and NSPC end user participants both rated their knowledge levels much higher than the average customers. The Stratum 4 values were 8.5, 8.3, and 7.8 for lighting, HVAC, and Other, respectively; while the corresponding participant scores were 7.5, 7.3, and 7.5. The fact that these participant values are already skewed to the high end reduces the magnitude of any changes that this cohort can possibly experience over time. Of course, one must not forget that these participant scores are high due, at least in part, to the past 15 to 20 years of utility audit and rebate programs that have to some extent already transformed this segment of the market.

As with several of the results that we will present on the end user research we conducted, the 1998 NSPC participant end users are very similar to the Stratum 4 customers from the California baseline survey and both of these are very different from the average customers in the California baseline. The differences between the end user participant and baseline results should not be interpreted as program effects for two reasons. First, the participants were interviewed early in the implementation process, too early to attribute their characteristics at the time of the interviews to their participation in the program. Second, the participants' characteristics are better compared to the Stratum 4 baseline respondents, which are their closest peer group based on the size of the participant customers. Thus, the high knowledge levels and preponderance of practices oriented toward energy-efficiency are more likely to be factors that explain their participation in the Program rather than effects of such participation.

Although our initial indicator is easy to measure and useful, it is a general self-rating and, as such, may be limited in its ability to pick up specific changes in knowledge levels. Future measurements of 1998 participants should explore other questioning approaches, perhaps unaided requests for identification of specific savings opportunities.

A summary of how the results of this first-year evaluation bear on the third end-user hypothesis is provided in Table 10-11.

Table 10-11
Summary of First-Year Results Associated with End User Hypothesis No. 3

Element	Description
Hypothesis	<i>3. Increased awareness and knowledge of the benefits of non-lighting energy-efficiency</i>
Indicators	Increased or sustained levels of awareness and knowledge of EE non-lighting opportunities
Key Sources	Interviews with Participating End Users Baseline End User Surveys
Evidence to Date	Limited, mostly baseline. Mean self-reported baseline knowledge scores for CA (0 to 10 scale) were 5.9 for lighting, 5.4 for HVAC and 5.5 for Other. (The baseline differences between lighting and HVAC and Lighting and Other are statistically significant.) Corresponding Stratum 4 baseline scores were 8.5, 8.3, 7.8. Participant scores were 7.5, 7.3, and 7.5.
Overall Strength of Evidence in Supporting Hypothesis	N/A , no change in indicators available yet.
Related Issues	Follow-up measurements to these first-year results are necessary to determine whether any change in these indicators occurs. Difference between end user participants and baseline results should not be interpreted as program effects because the participants were interviewed early in the implementation process and because they may have self-selected into the Program based on their characteristics.

10.3.4 Increase in Role of Energy-Efficiency in Energy-Related Procurement Practices

The fourth end user hypothesis that we developed centers around the extent to which the program addresses a key aspect of the organizational practices barrier common among end users. The particular aspect of this barrier that we are interested in here concerns the extent to which end users' utilize economically rational decision-making processes for their energy-related investment decisions. We believe that the hypothesis that a program leads to an increase in the role of energy-efficiency in energy-related procurement strategies is best addressed through a combination of the several distinct but related indicators. The original indicators that we identified in Section 4 were: (a) *Increased use of financial criteria for energy-efficiency related decisions* and (b) *Increased consistency between energy and non-energy investment criteria*. To these two, we

now add three more indicators that we believe will further contribute to our assessment of the hypothesis, all of which have been utilized with some success in a previous related study (XENERGY, 1998):

- (c) Percent of customers with policies for selecting efficient equipment
- (d) Percent of customers with annual budget set aside for efficiency improvements
- (e) Percent of customers with person or group assigned to controlling energy costs

The baseline results associated with each of these indicators are summarized in Table 10-11. There is one particularly striking and consistent pattern to these results: End user participants and Stratum 4 baseline respondents both already exhibit the characteristics of what we would consider rational, if not, transformed customers. For indicators a, c, d, and e, the participant and Stratum 4 results differ markedly from those of the average customers and always in the direction indicating these customers are focused on trying to efficiently manage their energy use. For example, 95 percent of Stratum 4 end users report that they use long-term investment criteria to make energy-related equipment purchases (versus 92 percent for participants and 58 percent for the average California end user). The pattern between the three groups is virtually identical with respect to whether they have policies for selecting efficient equipment (61 percent of Stratum 4, 61 percent of participants, and 25 percent on average), annual budgets set aside for energy efficiency (28 percent of Stratum 4, 20 percent of participants, and 18 percent on average), or have assigned a person or group to manage energy use (93 percent of Stratum 4, 89 percent of participants, and 57 percent on average).

The one exception to the consistent pattern above occurs with the question concerning whether end users use the same criteria for both energy and non-energy-related decisions. It is important to point out that the baseline survey for this study is the first instance in which we have attempted to explore this indicator. The specific question asked of respondents was: *Are the financial criteria used to make energy-related equipment selections the same as those used by your organization to make other capital investments?* Interestingly, the answer to this question did not vary at all by size stratum, with about 70 percent of respondents in each category answering “yes” (whereas the stratum results for the other indicators often varied six-fold between the smallest and largest customers). There are at least two possible explanations for why these results would be different from all of the other indicators. First, the results may accurately reflect the truth and not be inconsistent with the other findings. We asked simply whether the criteria used were the “same” between energy and other capital investment, not whether one was more rational than the other. It is entirely possible that for those 42 percent of customers that report that they do not use long-term investment criteria for energy-related equipment selection, that they also do not use such criteria for other capital investments. Imbedded in our question was the assumption that their decision-making criteria for non-energy capital investments were rational. In retrospect, this seems to have been a poor assumption. If, in fact, many customers are as short-term focused for non-energy capital investments as they are for energy-related ones, this only underscores the difficulty of changing such orientations. It is difficult enough to change energy-related practices that are inconsistent with other practices at an organization, it is even more difficult to change practices that affect energy-efficiency negatively but pervade the entire decision-making orientation of the

organization. The second possible explanation for the fact that no stratum-based variation occurred in responses to this question is that the question itself may lead to a common form of cognitive dissonance. To answer “no” to this question, a respondent may quickly and instinctively realize that they are admitting an irrational contradiction. If so, few decision-makers, whether at small or large organizations are likely to be willing to acknowledge this with a “no” answer.

In our opinion, indicators a, c, d, and e, when taken together, provide an important perspective on the participants in the 1998 NSPC, their similarity to their Stratum 4 peers, and the likelihood that the program would induce a change in the role and importance of energy-efficiency procurement practices for this 1998 participants. The picture painted here is of a group of participants that came into the program with many of the characteristics for which we would want to see the program induce a change already in place; particularly when these characteristics are compared between the participants and average customers. For two of the indicators, in fact, use of long-term investment criteria and assigned energy manager function, there is virtually no room for improvement in the participant group (since 92 and 89 percent of participants, respectively, already possess the desired characteristic).

Finally, in order not to beg an obvious question, we repeat here what we have said elsewhere in this section: Differences between end user participant and baseline results should not be interpreted as program effects because the participants were interviewed early in the implementation process and because they may have self-selected based on their characteristics. The fact that their peer group, the Stratum 4 baseline customers, also possess the desired characteristics in virtually the same proportions as the participants add further evidence to our belief that for the 1998 end user participants, it is very unlikely that Hypothesis N^o4 will be substantiated. Thus, even though we only have baseline information, we must conclude that the evidence for the hypothesis to date is weak. This is not necessarily because the Program design is flawed but rather because those choosing to enter the Program were already manifesting the very behavior the Program was designed to induce.

A summary of how the results of this first-year evaluation bear on the fourth end-user hypothesis is provided in Table 10-12.

Table 10-12
Summary of First-Year Results Associated with End User Hypothesis No. 4

Element	Description
Hypothesis	<i>4. Increase in role of energy-efficiency in energy-related procurement practices</i>
Indicators	<p>Original Indicators:</p> <ul style="list-style-type: none"> Increased use of financial criteria for EE decisions Increased consistency between energy and non-energy investment criteria <p>Additional Indicators:</p> <ul style="list-style-type: none"> Percent of customers with policies for selecting efficient equipment Percent of customers with annual budget set aside for efficiency improvements Percent of customers with person or group assigned to controlling energy costs
Key Sources	<p>Interviews with Participating End Users</p> <p>Baseline End User Surveys</p>
Evidence to Date	<p>Moderate, mostly baseline.</p> <p><u>Use Long-Term Investment Criteria:</u> Baseline results are 58% CA, 52% non-CA. CA figures vary from low of 15% for Stratum 1 to high of 95% for Stratum 4. Figure for participants was 92%.</p> <p><u>Use Same Criteria for Energy as Other Investments:</u> Baseline results are 70% CA, 69% non-CA. Results do not vary by size strata. Question not asked of participants.</p> <p><u>Have Policies for Using Efficient Equipment:</u> Baseline results are 25% CA, 23% non-CA. CA figures vary from low of 10% for Stratum 1 to high of 61% for Stratum 4. Figure for participants was 61%.</p> <p><u>Annual Budget Set Aside for Efficiency Improvements:</u> Baseline results are 18% CA, 17% non-CA. CA figures vary from low of 5% for Stratum 1 to high of 28% for Stratum 4. Figure for participants was 30%.</p> <p><u>Assigned Energy Manager Function:</u> Baseline results are 57% CA, 53% non-CA. CA figures vary from low of 32% for Stratum 1 to high of 93% for Stratum 4. Figure for participants was 89%.</p>
Overall Strength of Evidence in Supporting Hypothesis	<p>Weak because of high initial percentage of participant customers already using long-term investment criteria and assigned energy managers. Initial values limit how much these indicators can change among participants as a result of the program intervention.</p>
Related Issues	<p>Follow-up measurements to these first-year results are necessary to determine whether any change in these indicators occurs.</p> <p>Difference between end user participants and baseline results should not be interpreted as program effects because the participants were interviewed early in the implementation process and because they may have self-selected into the Program based on their characteristics.</p>

10.3.5 Increased Demand for Energy-Efficiency Products and Services, Especially Non-Lighting

The fifth end user hypothesis involves an obvious, desired outcome of the 1998 NSPC: an increase in the demand for energy-efficiency products and services, especially non-lighting. To this hypothesis we should probably add the following refinements: increase in the *sustainable* demand for *and implementation of* energy-efficiency products and services, especially non-lighting. The word *sustainable* may have been implied but is best added to reinforce its importance. The phrase *and implementation of* is added to emphasize that even demand for efficient products and services is a proximate not ultimate indicator. The ultimate indicator of change in the market is a self-sustaining increase in the implementation of cost-effective energy efficiency products and services.

The baseline component of this study provides information on recent penetration of energy-efficient measures. However, an important caveat to this information must be made: the information is based on self-reports from end users provided during an extensive telephone survey. It is important to note that this proviso only applies to the self-reports of measure penetrations. We are confident that the telephone surveys and interviews employed for this study have provided accurate results for virtually all of the indicators necessary for evaluation of near-term and longer-term market effects of the 1998 NSPC. The study design, scope and available resources were never intended to include extensive, representative on-site surveys or other means of measuring efficient product and service market share over time. The need for efficient market share data actually cuts across a number of nonresidential projects and has been addressed in the CBEE's recent scoping study *Efficiency Market Share Needs Assessment and Scoping Study* (RER, 1999). The information collected in our study by telephone was included to provide an early source of measure penetration information and to complement other data collection efforts.

The self-reported energy-efficiency actions that baseline respondents reported making over the past two years are provided in Section 5.2.2 of this report. Rather than going over the detailed information presented in that section, we wish to note here only those general aspects of the results that are most relevant to assessing the market effects of the NSPC on a near-term basis and considering issues related to future effects measurements.

As we expected based on past experience with reported implementation of energy-efficiency measures via telephone surveys, the levels of reported efficiency actions tend to be higher than what we think is true. Having expected this, we built several levels of probing into our questions that require increasing levels of knowledge to demonstrate implementation. With each probe, the reported penetrations decrease but still end up, we believe, with an upward bias. As discussed in Section 5, when asked if they had undertaken *any* specific actions to improve energy efficiency or otherwise reduce energy consumption *over the past two years*, a large fraction of the energy-weighted establishments indicated that they had: 61% for CA and 66% for non-CA (the difference is not statistically significant). When weighted by establishments the figures are 43% and 47% for the CA and non-CA markets, respectively. When viewed by size strata, the differences are more dramatic, ranging in CA from a low of 41% in Stratum 1 to a high of 95% in Stratum 4. The percentage of participants reporting they took some efficiency actions in the two years prior to

their 1998 NSPC participation was 92 percent, again, very similar to the results for the Stratum 4 baseline respondents.

Establishments that reported taking energy efficiency actions were also asked to identify the *general* areas in which these actions were taken. The distribution of actions taken was similar for CA and non-CA markets and occurred in the following approximate proportions (energy weighted):

Actions taken over the past two years...

- About half of the market reported implementing some type of efficient lighting measure or practice;
- About one-third of the market reported implementing some type of efficient HVAC measure or practice;
- About one-third of the market reported implementing some type of efficient motors or variable speed drives;
- Slightly over one-quarter of the market reported installing energy management systems or *other* controls; and
- About one-sixth to one-fifth of the market reported re-engineering manufacturing or process systems to save energy.

Next, respondents were asked to describe the specific energy-efficiency actions they had taken. This question was asked on an open-ended basis and the results post-coded. The levels of actions drop significantly for those measures that customers were able to describe well (see Table 5-14). The majority of respondents only cited the general category “efficient equipment” when asked for more specific descriptions of the energy efficiency measures they installed. Those respondents that could provide more detail indicated that: T-8s, efficient ballast, and controls were the most popular lighting measures; variable speed drive motors were the most popular motor measure, but mainly for the largest customers; and controls were the most frequently cited HVAC measure outside of the “general equipment” category.

We also asked respondents to provide an estimate of the percent of their facility’s square footage for which the efficiency action was taken. For the California respondents, the average percentage of square footage effected was 59 percent for lighting, 43 percent of HVAC and motors, 36 percent for process, and 69 percent for controls. Thus, the results reported in the bullets above by general area can be cut roughly in half to account for the actual amount of energy use effected.

Lastly, respondents were asked to estimate the percent by which they believed their facility’s energy use had been reduced by all of the actions they reported. The energy-weighted mean savings reductions reported were approximately 13 percent for both the California and non-California markets (note that these percentages only apply to the roughly 60 percent of customers who reported they took at least one action, the percent for the remaining 40 percent should be inferred to be zero).

As repeated in the summary table, we rate the overall strength of the evidence in supporting the hypothesis as “not applicable” because no *changes* in the indicators are available yet. Nonetheless, the high proportion of participants who report taking efficiency-related actions in the past 2 years and the low net-to-gross ratio must be highlighted as indications that *for the 1998 participants*, the research hypothesis may have to be rejected simply because when these customers joined the 1998 Program they were already manifesting to a large extent the very behaviors that the Program was designed to induce. That is, there is little room for improvement over time with respect to creating significant new increases in demand (whether sustainable or not). However, as mentioned previously, one should not forget that these proportions are high due, at least in part, to the past 15 to 20 years of utility audit and rebate programs that have to some extent already transformed this segment of the market.

Again, as repeated throughout this section, differences between end user participant and baseline results should not be interpreted as program effects because the participants were interviewed early in the implementation process and may have self-selected into the Program.

A summary of how the results of this first-year evaluation bear on the fifth end-user hypothesis is provided in Table 10-13.

Table 10-13
Summary of First-Year Results Associated with End User Hypothesis No. 5

Element	Description
Hypothesis	<i>5. Increased demand for EE products and services, especially non-lighting</i>
Indicators	Increase in penetration rate of EE products and services, especially non-lighting
Key Sources	Interviews with Participating End Users Baseline End User Surveys Program Tracking Data
Evidence to Date	Limited, mostly baseline. Detailed results on self-reported efficiency actions taken over the past two years are presented in Section 5.5.2. Reported levels are high: 60 percent of baseline respondents report taking at least one efficiency-related action in the past two years. Levels of reported actions taken by participants prior to the 1998 NSPC are even higher at 92 percent and, again, very similar to those reported for Stratum 4 baseline respondents (95 percent). No major differences in self-reported penetration levels between CA and non-CA baselines. Net-to-gross analysis of end user participants indicates approximately half of the savings associated with the program are likely to be program induced.
Overall Strength of Evidence in Supporting Hypothesis	As a conservatism, N/A , because no change in indicators are available yet. Nonetheless, the high proportion of participants who report taking efficiency-related actions in the past 2 years and the low net-to-gross ratio must be highlighted as indications that the baseline evidence is weak with respect to creating significant new increases in demand (whether sustainable or not).
Related Issues	Follow-up measurements to these first-year results are necessary to determine whether any change in these indicators occurs. Further analysis, particularly comparisons with measure saturations from on-site based data, is needed to assess accuracy of phone-based, self-reported measure adoption. The currently planned Nonresidential Market Share Tracking project should help to meet this evaluation's need for accurate longitudinal measure implementation data. Difference between end user participants and baseline results should not be interpreted as program effects because the participants were interviewed early in the implementation process and because they may have self-selected based on their characteristics.

10.3.6 Increased Knowledge and Awareness of Performance Contracting

The indicators for this sixth end-user hypothesis are: (1) an increase in measured awareness of performance contracting and ability to identify features among end users, and (2) an increase in penetration of performance contracting in the end user market. The data to test this hypothesis draw on interviews with participating end users, baseline end users, and participating EESPs.

It is important to note that energy performance contracts (EPCs) were only used with third parties by non-sponsor customers. For this group, EPCs comprised 41% of contractual agreements. The

most common type of contract with third parties was the fee-for-service contract (61%), followed by EPCs (21%) and “other” types of contracts (15%).

Prior to participating in the Program, 61% of the participants had heard of performance contracting. For baseline end users, the awareness of performance contracting is moderate. When weighted by energy use, approximately 30% of CA and 34% of non-CA establishments are aware of energy performance contracting (EPC). The difference is not statistically significant. Awareness levels vary greatly by size strata. For example, differences in awareness in CA range from 7% among the smallest customers to 71% among the largest.

A much smaller number of establishments were able to demonstrate an understanding of the characteristics of EPC. On an energy-weighted basis, only 18% of the CA and 20% of the non-CA organizations could identify the defining characteristics of EPC. Not surprising, the larger establishments were much better at accurately defining EPC. CA figures vary from low of 1% for Stratum 1 to high of 55% for Stratum 4.

In addition, within the last two years, over half (55%) of the participants were approached with EPC offers. For baseline end users, the energy-weighted percentage of customers that report they *received at least one EPC offer in the last two years* was 27% in CA and 22% in non-CA. The difference is not statistically significant. Strong differences exist between size strata. For example, Stratum 4 baseline respondents were more closely aligned with participants, with 72% stating that they had been approached in the past two years with EPC offers.

Among those baseline establishments that received EPC offers, only a small percentage, roughly 13% in both the CA and non-CA markets, resulted in *signed agreements*. Institutional customers were most likely to sign final contracts. The net energy-weighted fraction implementing performance contracts over the past two years in California is estimated to be 3.5%. Outside California the estimate is 2.9%. CA figures vary from low of 0% for Stratum 1 to high of 8% for Stratum 4. Figure for participants prior to participation in the 1998 NSPC was 5%.

Finally, from the perspective of participating EESPs, there is little evidence that the Program has motivated them to increase their use of EPCs over what they normally do. Participating EESPs reported no major differences between the types of contracts initiated with clients under the NSPC Program versus those negotiated with customers outside the Program.

A summary of how the results of this first-year evaluation bear on the sixth end-user hypothesis is provided in Table 10-14.

Table 10-14
Summary of First-Year Results Associated with End User Hypothesis No. 6

Element	Description
Hypothesis	<i>6. Increased knowledge and awareness of performance contracting</i>
Indicators	<p>Increase in measured awareness of performance contracting and ability to identify features among end users</p> <p>Increase in penetration of performance contracting in the end user market</p>
Key Sources	<p>Interviews with Participating End Users</p> <p>Baseline End User Surveys</p>
Evidence to Date	<p>Limited, mostly baseline.</p> <p><u>"Heard of" Performance Contracting:</u> Baseline results are 34% CA, 30% non-CA. CA figures vary from low of 7% for Stratum 1 to high of 71% for Stratum 4. Figure for participants was 61%.</p> <p><u>Can Describe Performance Contracting:</u> Baseline results are 18% CA, 20% non-CA. CA figures vary from low of 1% for Stratum 1 to high of 55% for Stratum 4.</p> <p><u>Offered a Performance Contract in Past 2 Years:</u> Baseline results are 27% CA, 22% non-CA. CA figures vary from low of 2% for Stratum 1 to high of 72% for Stratum 4. Figure for participants was 55%.</p> <p><u>Signed a Performance Contract in Past 2 Years:</u> Baseline results are 3.5% CA, 2.9% non-CA. CA figures vary from low of 0% for Stratum 1 to high of 8% for Stratum 4. Figure for participants <u>prior to participation in the 1998 NSPC</u> was 5%.</p> <p>Within the 1998 NSPC, 21% of participants report they are engaged in performance contracts with the third-party EESP sponsor (figures are 41% among non-sponsor customers and 0% among self-sponsor customers).</p> <p>Participant EESPs report that approximately one-third of their contracts with participant end users are performance contracts. They report that about the same fraction of their contracts with customers outside the program are also performance contracts.</p>
Overall Strength of Evidence in Supporting Hypothesis	<p>Overall, N/A, no change in indicators available yet.</p> <p>For penetration of performance contracting, uncertain. On one hand, the percent of participant customers using performance contracts in the program (21%) is higher than what would be expected even for Stratum 4 of the baseline (8%); on the other hand, EESPs report the percent of performance contracts they have in the program is about the same as the fraction they have with customers outside the program <u>and</u> they report the program has not significantly increased their business yet. It is thus possible that the overall level of performance contracting may not have changed but is concentrated within the program participants for 1998.</p>
Related Issues	<p>Follow-up measurements to these first-year results are necessary to determine whether any change in these indicators occurs.</p> <p>Further analysis of the size of the performance contracting industry in California and nationally is needed. The baseline survey provides an excellent estimate of the penetration of performance contracting among customers, however, the method is less robust with respect to estimating the size of the market in revenues. Comparative analysis should be conducted with the Frost and Sullivan and Easton studies.</p>

10.4 OTHER MARKET ACTORS

The detailed hypotheses and indicators developed for these other market actors can not be formally addressed because we do not have adequate information from this evaluation. The populations of other market actors are large and diverse (for example, there are at least several hundred HVAC contractors that serve California's nonresidential customers). Other market actors are addressed under the EESP breadth and depth hypotheses (EESP Hypothesis N^o4). While we believe our baseline for traditional ESCOs and retail energy service providers is reasonably robust, the baseline for other supply-side actors is weak. This lack of information for these market actors is consistent with the original request for proposals for this project and our scope of work. To have constructed a more robust baseline for other supply-side actors would have required a disproportionate share of project resources. One or more complementary studies that address supply-side actors by end use market over time are needed. We have provided a set of recommendations related to this topic in another study for the CBEE.¹ In addition, we note that the CBEE's MA&E planning process is currently addressing the issue of characterizing and monitoring supply-side markets.

10.5 TIMING OF EXPECTED MARKET EFFECTS

To complement the assessment presented above, we present in Table 10-15 estimates of the amount of time that we believe would be necessary to observe market effects from the 1998 NSPC. Consistent with the caveats presented earlier in this section, we note that market effects would be expected to be observed for slightly less than half of the hypotheses shown in the table within the timeframe of this first-year evaluation. For most of the hypotheses, a period about two years would be reasonable within which to expect evidence of market effects across a majority of the hypotheses. A few hypotheses could require even longer to assess (up to five years).

¹ *Compilation and Analysis of Currently Available Baseline Data on California Energy Efficiency Markets*, prepared by XENERGY Inc. for San Diego Gas and Electric Company and the California Board for Energy Efficiency, April 1999.

Table 10-15
Range of Time Within Which Evidence in Support of Hypotheses Should Be Expected If Hypotheses are True

Hypotheses	Changes Reasonable to Expect within Timeframe of First-Year Evaluation?	Expected Length of Time for Most Effects to Materialize	Comments
EESPs 1. <i>Development of improved marketing and sales skills</i>	Yes (see comments)	1-2 years	<ul style="list-style-type: none"> • Depends partly on how confident EESPs are with respect to whether Program will be implemented and at what funding level. <ul style="list-style-type: none"> ⇒ Since marketing and sales strategies are typically developed on an annual cycle with quarterly or mid-year adjustments, changes could be expected during the first-year of program implementation. ⇒ However, uncertainty existed in 1997 and 1998 with respect to funding and multi-year length of Program (and PGC), this may have limited some EESPs willingness to invest in riskier changes to business strategies.
2. <i>Changes in business strategies</i>	Yes (see comments)	1-2 years	<ul style="list-style-type: none"> • Same as previous.
3. <i>Energy-efficiency product and service innovation</i>	Some (see comments)	1-5 years	<ul style="list-style-type: none"> • Short-term innovation based on integration or novel use of existing technologies should be observable during and after the first year of the Program. Innovation that involves new product development or commercialization could take considerably longer (e.g., 2 to 5 years).
4. <i>Changes in breadth and depth of EESP industry</i>	Some	1-2 years	<ul style="list-style-type: none"> • Effect of Program on firms' decision to enter CA EE market from scratch likely to depend on confidence in funding and multi-year status of Program. A one-year lag between the first-year of demonstrated operation of the Program and a given firm's decision to enter the market more aggressively is reasonable to expect. • Effect of Program on shifting existing CA firms toward greater emphasis on EE should be more immediate.

(Continued)

Table 10-15 (continued). Range of Time Within Which Evidence in Support of Hypotheses Should Be Expected If Hypotheses are True

Hypotheses	Changes Reasonable to Expect within Timeframe of First-Year Evaluation?	Expected Length of Time for Most Effects to Materialize	Comments
EESPs (continued)			
5. <i>Improved M&V Capabilities</i>	Some	1-2 years	<ul style="list-style-type: none"> Interviews conducted for this first-year evaluation before any firms actually implemented M&V. Firms likely to decide on how to handle M&V requirements in first year or second year at the latest (may change approach based on first-year experience).
6. <i>Increased interest in the importance and viability of performance contracting as a long-term business strategy</i>	Yes	1-2 years	<ul style="list-style-type: none"> Decision on whether to use the Program to expand into or amount of performance contracting business should be expected within most firms' annual business planning cycle. Like other EESP effects, likely to depend on perceived certainty over funding levels and length of Program.
CUSTOMER/END USER			
1. <i>Improved confidence in EESP as credible energy-efficiency service provider.</i>	No	1-2 years among participants 2-5 years among non-participants	<ul style="list-style-type: none"> End users interviewed in Fall 1998. No re-interviews have yet been conducted. Among 1998 Cohort: Initial effect could result immediately if participant sees EESP's contract with Administrator as validating credibility of EESP. Second effect could be expected after installation (still pending in most cases). Third effect could occur after first-year M&V results (1 year after Installation, apx. 2 years after participation). Among Population at-large: expect a multi-year lag in dissemination of cohort's experience to non-participants
2. <i>Increased confidence in measure savings.</i>	No	2 years among participants 2-5 years among non-participants	<ul style="list-style-type: none"> End users interviewed in Fall 1998. No re-interviews have yet been conducted. Among 1998 Cohort: Some initial effect could result immediately if participant sees EESP's contract with Administrator as increasing likelihood savings estimated will materialize. Second effect could be expected after first-year M&V results (1 year after Installation, apx. 2 years after participation). Among Population at-large: expect a multi-year lag in dissemination of cohort's experience to non-participants.

(Continued)

Table 10-15 (continued). Range of Time Within Which Evidence in Support of Hypotheses Should Be Expected If Hypotheses are True

Hypotheses	Changes Reasonable to Expect within Timeframe of First-Year Evaluation?	Expected Length of Time for Most Effects to Materialize	Comments
End User (continued)			
<i>3. Increased awareness and knowledge of the benefits of non-lighting energy-efficiency</i>	Some	Immediate to 1 year and participants 2-5 years among non-participants	<ul style="list-style-type: none"> End users interviewed in Fall 1998. No re-interviews have yet been conducted. End use prices should lead to immediate emphasis on non-lighting. A one-year lag for some EESPs that previously focused on lighting to improve non-lighting sales and implementation skills is reasonable to expect.
<i>4. Increase in role of energy-efficiency in energy-related procurement practices</i>	No	1-2 years	<ul style="list-style-type: none"> End users interviewed in Fall 1998. No re-interviews have yet been conducted. Among 1998 Cohort: Effect could be expected after first-year M&V results (1 year after Installation, apx. 2 years after participation).
<i>5. Increased demand for EE products and services, especially non-lighting</i>	Yes	Immediate to 1 year among participants 2-5 years among non-participants	<ul style="list-style-type: none"> End users interviewed in Fall 1998. No re-interviews have yet been conducted. End use prices should lead to immediate emphasis on non-lighting, which should appear in program tracking data. A one-year lag for some EESPs that previously focused on lighting to improve non-lighting sales and implementation skills is reasonable to expect after which an increase in non-lighting EE penetration would be expected both among participants and non-participants (spillover).
<i>6. Increased knowledge and awareness of performance contracting</i>	Yes	Immediate to 1 year among participants 2-5 years among non-participants	<ul style="list-style-type: none"> Performance contracting can be promoted to customers during the first-year of the Program. Satisfaction with performance contracting would be expected to lag 2 years because of lag in M&V reporting.

In this section we present two sets of recommendations, both of which are based on the results of this first-year evaluation. The first set of recommendations addresses issues associated with the program itself, while the second set focuses on NSPC-related research needs.

11.1 PROGRAM-RELATED RECOMMENDATIONS

The discussion presented below is intended to suggest ways in which the NSPC might be improved or modified. The recommendations are not intended to provide specific program design details, but rather to suggest general areas of improvement upon which we believe policy-makers and NSPC program designers should focus their efforts. Although some of the recommendations made here were partially addressed by the CBEE in its PY99 advice filing,¹ they are included in this final report to underscore their importance and to provide additional suggestions should any further changes be necessary. We recommend that those responsible for setting the NSPC Program objectives, design mechanisms, and implementation procedures:

1. *Clarify Specific EESP Changes that the Program Seeks to Induce and Develop Program Mechanisms that are more Directly Tied to Initiating these Specific Changes.*
2. *Continue Efforts to Change the Composition of End-User Participants.*
3. *Reassess the Role of Performance Contracting.*
4. *Expand the Diversity of EESP Participants.*
5. *Continue Efforts to Reduce Perceived and Actual Costs of Program Participation.*

1. Clarify Specific EESP Changes that the Program Seeks to Induce and Develop Program Mechanisms that are more Directly Tied to Initiating these Specific Changes. One of the most important goals of the NPSC that was outlined in the RFP for this evaluation was that the Program lead to lasting changes in EESP marketing and other business practices. As discussed in the Program Theory section of this report (Section 4), a significant portion of the hypothesized market effects for the NPSC are predicated on a causal sequence of events that starts with changes in EESP marketing and business practices. As summarized in Section 10, there is little evidence from the research conducted to date that the Program has initiated major changes in participating EESP business practices. It is critical, therefore, that the mechanisms by which the Program intends to induce the desired changes be reconsidered.

¹ Recommendations of the California Board for Energy Efficiency on 1999 Programs and Budgets, Institutional and Transitional Issues, and Adopted Policy Rules, October 15, 1998.

In Section 4, we hypothesized a number of possible EESP changes that the Program might be seeking to induce.² We recommend that NSPC program designers continue this process by developing more explicit statements of the specific changes in EESP business practices that are desired. Specifying and prioritizing the desired EESP changes would help to clarify which aspects of the current program design are useful to achieving the highest priority goals and which are not. For example, if a stated objective is to increase the number of efficiency offers to smaller customers, then program designers might set as a goal that traditional ESCOs develop new ways of reducing their transaction and marketing costs for these customers. An alternative approach, however, might be to get other supply-side actors that commonly work with these customers, such as contractors and O&M firms, to develop new energy-efficiency capabilities that they can offer during their normal business interactions. Although the final objective is the same in both cases (more offers for small and medium sized customers), the means to achieving it differ and may therefore warrant different program strategies.

Because the EESP-related objectives stated to us throughout this evaluation were fairly general, we developed a wide range of market effects indicators in order to cover as many hypothetical outcomes as possible. To develop more effective Program mechanisms, we believe that *the Program design itself must include much more explicit goals on the specific types of changes that are desired in EESP practices*. We also caution, however, that these goals must be realistic and grounded in economic theory and the amelioration of very specific and plausible supply-side market barriers.

2. Continue Efforts to Change the Composition of End-User Participants. As demonstrated in Sections 10, 6, and 5 of this report, end user participants in the 1998 NSPC were most similar to the largest, most sophisticated end users in the non-residential population. There were three negative consequences of the end user participant population characteristics: 1) a moderately low percentage of program-induced energy savings; 2) a reduced likelihood of observing changes in proximate indicators of market effects (because a high percentage of participants already possess the characteristics the program seeks to induce); and 3) a lack of participation among underserved market segments (i.e., those customers with low historic participation in California energy-efficiency programs).

We believe that if an intent of the program is to initiate market changes that can lead to market effects then the Program must reach much broader and representative segments of the market than it did in 1998. One of the major changes in administration and design of the Program that was initiated by the CBEE and is currently being implemented is the bifurcation of the Program into two separate programs in 1999: the Small Business SPC (SBSPC) and the Large Non-Residential SPC (LNSPC). To be eligible for incentives under the SBSPC, projects must result in energy savings of at least 20,000 kWh, but no more than 200,000 kWh, per year. Multiple projects can be aggregated to meet the minimum size requirement. Another important change in the 1999 Program requirements was incorporation of new funding caps. Under the 1999 LNSPC funding level caps

² It is important to remember that most of the hypotheses we presented were our own interpretations of what the programs might or could be. During development of the Program Theory section in the Summer of 1998, we did not find any detailed enumeration of the program hypotheses that had been developed by other parties.

are as follows: \$0.4 million per customer site within each territory; \$1.5 million statewide for corporate parents and government parents (e.g., state and federal *agencies*); and \$6.0 million for all State government and Federal government, respectively. The last change made for PY99 that is likely to have some affect on the distribution of end user types is the creation of program sub-funds organized into the following areas: Large Comprehensive Retrofit, HVAC Equipment Turnover, Motor Turnover, Process Overhaul, and Commercial Renovation/Remodeling.

We believe that the changes made to the PY99 Program are important attempts to address the participation bias identified for the 1998 Program. The extent to which these changes will significantly alter the makeup of 1999 LNSPC participants will be known after the fact. We offer a few additional methods by which funds might be further leveraged in the future:

- *Consider multi-year customer caps.* As documented in this evaluation, many large customers are very recent repeat participants in incentive programs. Set appropriately, a multi-year cap would offer another way of spreading scarce incentive funding among a broader array of end users.
- *Consider limitations on the number of identical “repeat” measures for which incentives are paid.* If an objective of the program is to demonstrate general or measure-specific energy-efficiency benefits, which then stimulate further investments, then it might be reasonable to limit funding to a subset of *demonstration* measures for those organizations with either many identical sites or many identical applications for a given measure.

3. Reassess and Clarify Objectives with Respect to Performance Contracting between EESPs and End Users. As we noted in Sections 10, 7, and 6, there is little evidence to date that the program has increased the role of performance contracting in the end user market. Many EESPs purposefully prefer simpler contracting approaches such as fee-for-service or target performance contracting only to segments for which their experience shows it is appropriate. We have noted throughout this report that there is a lack of consensus in the industry on the current and future importance of performance contracting in the non-residential marketplace. We have also noted that the NPSC Program as currently designed and articulated is somewhat unclear as to its intent around performance contracting. The program obviously entails a performance contract between the administrators and the application sponsors; much less clear is the extent to which this administrator/applicant performance contract exists primarily as a means of providing *accountability for the use of ratepayer funds* or whether the purpose is to *increase performance contracting between end users and third-party EESPs*. In our opinion these objectives are sufficiently different as to lead to significant differences in Program design.

The central question for the NSPC program designers is: Where does performance contracting fit with respect to the other goals expressed for the Program? If these other program goals can be achieved with or without an increase in performance contracting in the market, then consideration should be given to finding other, simpler ways of ensuring accountability of ratepayer funds (for example, one might maintain rules on verification of baseline equipment and measure installation but reduce or eliminate some of the M&V requirements, particularly for non-controls measures for which stipulated savings have been developed and successfully used in prescriptive rebate

programs). If, on the other hand, increasing the amount of performance contracting that is occurring in the marketplace is a high-priority objective of the Program, then it should be explicitly stated as such, and additional program mechanisms should be considered to achieve this objective in light of the limited effects of the Program in this area in 1998. Our research indicates that this latter approach would be problematic, however, because many EESPs prefer a program that promotes energy efficiency but allows more flexibility with respect to their contractual relationship with their customers.

4. *Expand the Diversity of EESP Participants.* As discussed in Sections 10, 9, and 7, most EESP participants in the 1998 Program tend to be traditional ESCOs or engineering firms that have pre-program business practices focused on energy-efficiency or performance contracting. This was not an unexpected outcome since these are the very firms the Program intended to affect and they were in the best position to market and deliver the Program given their business orientation. At the same, another possible objective of the Program is to increase the importance of energy-efficiency services to the multitude of firms that regularly deliver equipment-related products and services such as HVAC contractors and O&M firms. Changing the business practices of these supply-side actors could be especially important to creating market effects for small and medium-sized customers to whom ESCOs rarely market. Increasing the participation of these companies will not be easy, however. Some considerations for increasing participation among other supply-side actors are:

- *Raise awareness levels of the NSPC among non-ESCOs.* Providing program and workshop notifications via the CBEE list-serves, though effective for those firms already plugged into the process, will not reach the majority of relevant supply-side actors. Efforts to make appropriate populations of supply-side firms aware of the Program will require more sophisticated target marketing efforts and development of industry-specific databases. Targeted advertising of the NSPC, either by itself, or within broader advertisements of efficiency programs should be employed.
- *Consider further simplification of program requirements and procedures.* The NSPC is not an easy program in which to participate, especially for firms without a lot of previous experience delivering energy-efficient products and services. If an important goal of the Program is to increase the amount of efficiency services provided by contractors and other supply-side actors who historically have not promoted these services, then further consideration should be given to simplifying the program participation requirements, as discussed further below.

5. *Continue Efforts to Reduce Perceived and Actual Costs of Program Participation.* A consistent criticism of the 1998 NSPC heard from both participating and non-participating EESPs throughout this evaluation was that the Program was too complex, burdensome, and costly. Many of the EESPs interviewed perceived that participation did, or would, lead to significant direct and indirect increases in transaction and hassle costs. These EESPs perceive the costs of participation to be high both in terms of the direct costs associated with meeting the Program's paperwork and M&V requirements and the indirect costs associated with having to give up control of the timing of project milestones (particularly, installation) to a process perceived to be uncertain and very long.

Most interviewees appreciated that changes were made for PY99 but expressed a wait-and-see attitude with respect to whether or not the changes went far enough.

We recognize that a balance must be struck between facilitating participation and maintaining adequate levels of accountability. We also recognize that the incentive levels of the NSPC were designed to include a premium, when compared to what they might otherwise be under a prescriptive rebate program, in order to offset the additional costs of participating in this type of program. It will be important to observe whether the changes made to the PY99 NSPC will convince more EESPs that the balance is right. In addition, the allowance of an overlap between small customer rebates and the SBSPC may provide a useful experiment since applicants will be able to choose between the two approaches (the former being simpler and offering lower incentive levels than the latter).

11.2 RESEARCH-RELATED RECOMMENDATIONS

Having now completed the first-year evaluation of the 1998 NSPC (with the exception of conducting a final program tracking analysis), we have encountered several areas that we believe require further research to benefit this and future related evaluations. Our resulting recommendations are to:

1. *Follow-up with Participating Customers to Assess Satisfaction and Investigate Program Effects*
2. *Apply 1998 NSPC Evaluation Research Approach to the 1999 Programs*
3. *Expand Assessment of Key Supply-side End-Use Markets*
4. *Use Baseline Data to Develop Models of Efficiency-Related Practices, Behaviors, and Barriers as Functions of Customer Characteristics*
5. *Further Investigate the Disposition of Measures Installed and Separately Identify Emerging Technologies*
6. *Incorporate NSPC Evaluation Needs into CBEE Market Share Tracking Study*

1. Follow-up with 1998 Participating Customers and EESPs to Assess Satisfaction and Investigate Program Effects. As mentioned in several instances throughout this report, the research scope for this evaluation did not include re-interviews with participating end users. This was because it was anticipated that many end users would still be in the early phases of the program implementation process in Spring 1999 when this first-year evaluation was scheduled for completion. An obvious important follow-up that is necessary to complete our understanding of the effects of the 1998 NPSC is to re-interview participating customers to assess their satisfaction with the DPA, PIR, and M&V elements of the Program and to assess whether they have made any changes to their efficiency-related business practices as a result of participation. In addition, even though a number of participating EESPs were re-interviewed in early March, most of these firms had not gone further than the DPA milestone. One or more sets of re-interviews with the 1998 participant EESPs later in 1999, and after the first M&V milestone (likely in 2000), would be

extremely useful to obtain feedback on the PIR and M&V elements of the Program, to obtain further information on any reported changes to end users' business practices; and to assess the extent to which accomplishment of these latter Program milestones contribute to reductions in performance uncertainty and uncertainty over the credibility of information provided by EESPs, which were cited by end users as the most significant barriers to investing in energy efficiency (see Table 3-7, Section 3; and Section 5).

A related research topic brought up by a CBEE member during review of the draft of this report is to assess end users' interest in and willingness-to-pay for M&V services. This information could be obtained from the 1998 participant end users during the followup interviews recommended above. To obtain the same information from a broad cross-section of end users, like that surveyed for the baseline results presented in Section 5 of this report, would require a separate study. This study could be conducted as a part of future longitudinal follow-up to our baseline results or as a separate, stand-alone project.³

2. Apply 1998 NSPC Evaluation Research Approach to the 1999 Programs. Two projects addressing the 1999 LNSPC and SBSPC,⁴ respectively, are currently planned under the CBEE's Phase II MA&E studies. We recommend that the evaluation framework used for this current 1998 NSPC study should also be applied to the 1999 program cohorts (both SBSPC and LNSPC). Thus, plans should be put in place to conduct two longitudinal sets of interviews with 1999 participants, one early in the implementation process, perhaps just after they have submitted BPAs, and one as late in the process as possible within the time constraints of the 1999 evaluation studies' final report deadlines.

3. Expand Assessment of Key Supply-side End-Use Markets,⁵ particularly with respect to whether there is any change in the percentage of contracting, engineering, and O&M firms that actively and successfully promote energy efficiency (especially to smaller customers). While we believe our baseline information on traditional ESCOs and retail energy service providers is reasonably robust, the baseline for other supply-side actors is quite weak. The lack of information for these market actors is consistent with our original scope of work, which required a prioritization of research objectives based on available project resources. To have constructed a more robust baseline for all groups of supply-side actors would have required a disproportionate share of project resources. One or more focused efforts that address supply-side actors by end use market over time is needed. We have provided a set of recommendations related to this topic in

³ Because of the amount of time and focus required to conduct a useful willingness-to-pay study, we recommend a separate study be conducted if this research is strongly desired by California policy-makers or program managers.

⁴ The SBSPC will be assessed within a Phase II MA&E study that includes *all* 1999 program intervention strategies targeted at small non-residential customers.

⁵ We believe that this recommendation should be implemented outside of the current 1998 NSPC study. As discussed below, better characterization of end-use supply-side markets is needed for many of the individual program elements in California. This need would be appropriate for the CBEE to consider incorporating into one or more of its Phase II or Phase III MA&E studies.

another study for the CBEE.⁶ In addition, we note that the CBEE's MA&E planning process is currently addressing supply-side data collection needs.

4. Use Baseline Data to Develop Models of Efficiency-Related Practices, Behaviors, and Barriers as Functions of Customer Characteristics. The baseline databases developed for this evaluation are extremely rich and offer a valuable source of empirical information that could be used to better understand the relative importance of factors that explain differences in end users efficiency-related behavior and intentions. Most of the analyses presented in Section 5 of this report show univariate and bi-variate results with some indications of statistical significance. Although useful, we know that these perspectives are limited in that they do not explore the multi-dimensional effects of customer characteristics simultaneously. There are a variety of statistical modeling techniques that could be applied to the baseline data to more rigorously assess the effects of customer size, business type, ownership status, decision-making structures, region (California/non-California), and perceived barriers, among others, on implementation of measures and efficiency-related organizational practices. Note that these techniques were not presented as part of this initial study due to time and resource constraints.

5. Further Investigate the Types of Measures Installed and Separately Identify Emerging Technologies. Because many projects were still awaiting DPA approval at the time of this report, the final analysis of the 1998 program tracking databases was deferred. This task will be conducted later in 1999 and will include analysis of the measures included in the DPAs. This data will provide an overdue look at the breakdown of specific measures and improve our understanding of how the Program affected measure choices. In particular, it will be important to investigate whether the Program induced a greater proportion of non-lighting measures than did previous utility programs, as well as whether the Program was utilized to support implementation of emerging or innovative measures.

⁶ *Compilation and Analysis of Currently Available Baseline Data on California Energy Efficiency Markets*, prepared by XENERGY Inc. for San Diego Gas and Electric Company and the California Board for Energy Efficiency, April 1999.

6. Incorporate NSPC Evaluation Needs into CBEE Market Share Tracking Study. As discussed in Section 5, we have some concerns about relying on telephone-based results for measure penetration data, which are important outcome indicators of the effectiveness of the NSPC and other programs. The measure penetration data developed for this evaluation was useful as a bellwether of trends and issues, however, higher resolution and more accurate data is advisable for tracking the market share of efficient products over time. This need could be addressed through the CBEE's upcoming Market Share Tracking Study for the non-residential sector. The longitudinal measure penetration needs of NSPC evaluation studies should be incorporated in the Market Share Tracking Study. We note, however, that one element of this year's NSPC evaluation design that is not included in the recommendations presented in the Market Share Tracking Feasibility and Scoping Study is the inclusion of one or more cross-sectional, comparison areas.

Range of Costs to Implement Research Recommendations

In Table 11-1, we provide rough estimates of the range of costs that would be required to implement each of the research recommendations discussed above. Most of the recommendations could be carried out at relatively modest costs, with the exception of Number 4, *Expand Assessment of Key Supply-Side End-Use Markets*. As we mentioned above, this recommendation is made with the expectation that it be incorporated into a broader MA&E effort that supports the information needs of multiple, program-specific evaluations.

Table 11-1
Approximate Estimate of Range of Costs to Implement Research Recommendations

Recommendation:	Cost Range
1. Follow-up with Participating Customers to Assess Satisfaction and Investigate Program Effects	\$40,000 to \$60,000
2. Apply 1998 NSPC Evaluation Research Approach to the 1999 Programs.	No cost estimated, scopes of work are being developed by utilities as part of the CBEE's Phase II MA&E studies.
3. Expand Assessment of Key Supply-side End-Use Markets (implement via separate/other studies)	\$75,000 to \$100,000
4. Use Baseline Data to Develop Models of Efficiency-Related Practices, Behaviors, and Barriers as Functions of Customer Characteristics	\$20,000 to \$30,000
5. Further Investigate the Types of Measures Installed and Separately Identify Emerging Technologies	\$10,000 to \$20,000
6. Incorporate NSPC Evaluation Needs into CBEE Market Share Tracking Study	\$5,000 to \$10,000

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13.1 NSPC ACRONYM LIST

Below is a list of the common acronyms used throughout this report:

BPA	Basic Project Application
CBECS	Commercial Buildings Energy Consumption Survey
CBEE	California Board for Energy Efficiency
CPUC	California Public Utilities Commission
DASR	Direct Access Service Request
DOE	Department of Energy
DPA	Detailed Project Application
DSM	demand side management
EEM	energy efficiency measure
EESP	energy efficiency service provider
EPC	energy performance contract
ESCO	energy service company
ESP	energy service provider (CPUC-approved provider of electricity)
FEMP	Federal Energy Management Program
FTE	full-time equivalent
HVAC	heating, ventilation and air conditioning
HVAC&R	heating, ventilation, air conditioning, and refrigeration
IOU	investor-owned utility
M&V	measurement and verification
NAESCO	National Association of Energy Service Companies
NSPC	Nonresidential Standard Performance Contract
NTGR	net-to-gross ratio
O&M	operations and maintenance
PGC	Public Goods Charge
PIR	Project Installation Report
R&D	research and development
RESCO	retail energy service company (equivalent to ESP)
SPC	Standard Performance Contract
UDC	utility distribution company

EVALUATION OF THE 1998 NONRESIDENTIAL STANDARD PERFORMANCE CONTRACT PROGRAM

Volume II - Appendices A through F

FINAL REPORT

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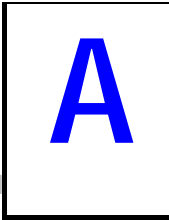
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1998 NSPC PROGRAM DESCRIPTION

IMPORTANT NOTE: This summary was taken from a description of the 1998 NSPC program presented on SCE's website. The description was modified to represent the entire program statewide. References to "SCE" were changed to "Program Administrator." Readers should note, however, that some very minor differences in program procedures among administrators existed in the 1998 program; therefore this document should be treated as a general guide to the program. Specific procedures for each administrator are available on their respective websites.

A.1 ABOUT THE PROGRAM

The Standard Performance Contract Program

The Standard Performance Contract (SPC) Program is a new energy efficiency program offered by the Program Administrators (SCE/SDG&E/PG&E) under the auspices of the California Public Utilities Commission (CPUC) and the California Board For Energy Efficiency (CBEE). The SPC program is a key element of the CPUC/CBEE goal of market transformation and the creation of a self-sustaining energy efficiency services industry. With this program, the Utilities offer a fixed price incentive to energy efficiency service providers (EESPs) for measured kilowatt-hour (kWh) energy savings achieved by the installation of an energy efficiency project. The fixed price per kWh, performance measurement protocols, payment terms, and all other operating rules of the program are specified in a standard contract.

Utility/Program Administrator's role

The role of the Program Administrator is to manage the program in a fair and nondiscriminatory manner, promote the program, educate customers and EESPs on the program, and enter into contracts with EESPs to pay for measured energy savings.

How does this program differ from traditional utility rebate programs?

The Standard Performance Contract is a "pay-for-performance" program. With traditional utility rebate programs, the utility pays an incentive directly to its customer based on an estimate of annual savings from a project. However, with the pay-for-performance SPC program, the utility pays a variable incentive amount to a third-party EESP, or to a customer acting as their own EESP, based on measured energy savings. The SPC is also different from traditional utility rebate programs in that the total incentive is paid over a two year performance period. During the performance period, the EESP must measure and verify the energy savings actually achieved using a mutually agreed upon measurement protocol.

What is an Energy Efficiency Service Provider (EESP)?

An EESP can be any company, organization or individual that contracts with the administrator to receive payment for measured energy savings resulting from an energy efficiency project. In the 1998 SPC Program, a SCE/SDG&E/PG&E customer can act as an EESP by contracting directly with their utility and installing and measuring savings from an energy efficiency project at their

own facility. A third-party EESP is any firm that implements all or part of an energy efficiency project at a customer's facility. An EESP may perform some or all of the following services related to an energy efficiency project: detailed or "investment grade" audits; engineering studies to assess project feasibility; engineering design; project financing; construction management; project installation/construction; and engineering measurement and verification of energy performance (e.g. project savings). EESPs that offer all of these services as a "turn key" contractor are also commonly referred to as Energy Service Companies or ESCOs.

A.2 SPC PROJECT ELIGIBILITY REQUIREMENTS

Measurement and Verification of Energy Savings

Because of the pay-for-performance nature of the SPC program, a key requirement for project eligibility is that the savings resulting from the project must be measured in accordance with a project specific measurement and verification (M&V) plan. The M&V plan must be prepared by the EESP in accordance with the Program Procedures Manual, and be mutually agreed upon by the Program Administrator and the EESP prior to beginning any work on project installation.

Minimum Project Savings

In order to qualify for the SPC program a project must produce savings of at least 200,000 kWh per year. Two or more projects may be combined, or "aggregated", to meet this requirement. Aggregated projects must employ the same energy efficiency measures and be installed at similar sites in order to make measurement and verification of multiple projects feasible.

Eligible Energy Efficiency Technologies

The SPC program is open to almost any equipment replacement or retrofit project for which the savings can be measured and verified. The project must have a useful life of greater than three years. Eligible energy efficiency technologies, or "measures" include, but are not limited to, replacement of standard fluorescent lighting with high efficiency fluorescent lighting, installation of variable speed drives on electric motors, installation of lighting controls to reduce lighting operating hours and replacement of standard efficiency air conditioning equipment with high efficiency equipment. Projects that are not eligible include any power generation project, co-generation, fuel substitution or fuel switching projects, new construction projects and any repair or maintenance project. A list of some of the eligible technologies is presented on the next page.

Eligible Technologies

Lighting Technologies

- Lighting efficiency projects
- Lighting controls projects
- Daylighting

HVAC&R Technologies

- Chiller replacement projects
- Air cooling and refrigeration compressor replacement projects
- Packaged cooling unit replacement projects
- Variable air volume conversion projects
- Air side economizer projects
- Water side economizer projects
- Air handler motor efficiency upgrades
- Air handler variable speed drive installations
- Variable speed drive installations on chilled water and condenser water pumps
- Energy management systems that control HVAC&R equipment
- Cooling tower motor efficiency upgrades
- Cooling tower motor variable speed drive installations
- Control installations for HVAC&R equipment
- Evaporative cooling
- Evaporative pre-cooling
- Building mass storage
- Special window glazing and glazing treatments in air conditioned buildings
- Exterior and interior window shading in air conditioned buildings
- Natural cooling (e.g., operable windows) in air conditioned buildings
- Indirect evaporative cooling (single stage and dual stage)
- Hot-spot ventilation in air conditioned buildings (such as attic vents and fans)
- Heat transfer (including heat pumps) to heat sinks, such as ground source cooling in air conditioned buildings
- Projects that upgrade the efficiency or controls of heating equipment
- Exhaust hood and fan projects
- Chiller and boiler heat reclaim
- Refrigerated case door projects

Non HVAC&R/Non Lighting Technologies

All projects that do not fall in the other two categories such as:

- Industrial process applications
- Variable speed drive installations on industrial fans and pumps
- Trimming impellers on industrial fans and pumps
- Projects improving building hot water efficiency
- All motor projects that do not fall under HVAC&R
- Electrical savings resulting from the installation of water flow controls

Technologies not eligible under the SPC program

- All technologies with a measure life of less than 3 years
- All technologies that are below federal and state minimum standards
- All measures that decrease building plug loads, such as "Green Plugs" or computer inactivity time-out controls
- All measures that are removable without the use of tools, such as screw in compact fluorescent lamps
- Projects that save energy because of operational changes
- Load shifting technologies
- All measures that do not reduce electrical consumption
- Fuel switching projects
- Self generation or cogeneration projects
- New construction projects
- Repair or maintenance projects

A.3 INCENTIVE PAYMENTS FOR ENERGY SAVINGS**Total program funding**

Program Administrators were authorized by the CPUC to contract for up to \$37 million in total incentive payments for the 1998 program year.

Payment for kWh savings

The price per kWh savings for the three main measure categories is shown in the table below:

Measure Type	Price/kWh
Lighting	\$0.075
HVAC&R*	\$0.210
Other	\$0.110

*Heating, Ventilating, Air-Conditioning & Refrigeration

The "Lighting" category includes lighting equipment retrofits and lighting control measures. The "HVAC&R" category includes heating, ventilation, air-conditioning and refrigeration equipment retrofits in commercial and industrial applications. The "Other" category includes any measure that is not categorized as either lighting or HVAC.

Minimum Energy Efficiency Standards

State and Federal minimum energy efficiency standards are applied to the "baseline" or existing system energy consumption to calculate energy savings that are eligible for SPC incentive payments. Only energy savings that exceed the applicable minimum energy efficiency standards are eligible for incentive payments under the SPC program. Applicable standards include, but are not limited to, State of California Title 20, and Title 24, and The Energy Policy Act of 1992.

Total Incentive Payment

The total possible incentive payment for a project is calculated as the estimated annual kWh savings multiplied by the price per kWh. The total incentive is paid to the EESP over a two year period in three payments. One payment of 40% of the estimated incentive will be paid upon verification of project installation. Two payments of 30% are paid after completion of the first and second measurement, or performance, periods of one year each. The actual incentive that is paid on a project is pro-rated based on the measured savings during each of the two performance periods. Thus, the total incentive paid on a project is determined by the actual performance of the project. The performance is measured in accordance with a measurement and verification (M&V) plan that is mutually agreed to between the Program Administrator and the EESP.

Limitations on EESP and Customer Incentive Payments

The CPUC has set limits on the amount of program funding any single EESP or utility customer participant may receive. EESPs are limited to a maximum of 30% of the total incentive budget, and customer's are limited to a maximum of 15% of the incentive budget funding.

A.4 PROJECT APPLICATION AND APPROVAL PROCESS

Overview

An EESP may ensure funding for a project by submitting and receiving approval of a Basic Project Application (BPA). After approval of the BPA, the EESP must adhere to a timeline for providing and receiving approval of detailed information about the project including a measurement and verification strategy for determining energy savings. If the project timeline is not met, the EESP risks expiration of the project funding. Ultimately, the EESP must install the project and receive approval of the project installation before receiving the first incentive payment. After a project is installed, the EESP moves into the two year performance period of the contract, during which the EESP must follow the approved measurement and verification plan to determine the actual energy savings for the project. The EESP submits and receives approval of the measurement and verification results at the end of each of the two performance periods to receive the second and third incentive payments. The first incentive payment, which is based on estimated savings, will be trued up by the second incentive payment which is based on the measured results.

The following table is a listing of the submittals that were/are required for participation in the 1998 SPC Program.

Summary of Required Project Submittals

<i>Submittals Preceding Contract</i>	<i>Purpose</i>	<i>EESP Submittal Schedule</i>	<i>Administrator Review Cycle*</i>
1. Basic Project Application (BPA)	EESP notification to Administrator requesting the reservation of project funding	Before September 30, 1999, and subject to program funding availability	30 Days
2. Detailed Project Application (DPA)	A detailed project proposal and basis for an agreement	For lighting projects, within 90 days of BPA approval For non-lighting projects, within 150 days of BPA approval	45 Days
3. Signed SPC Agreement	A standard agreement based on the project-specific performance arrangement between Administrator and EESP	Within 30 days of DPA approval	30 Days
<i>Submittals Following Agreement Execution</i>			
4. Project Installation Report (PIR)	A detailed description of the installed project	Suggested within 60 days of project installation and commissioning Before November 15, 1999	30 Days
5. Installation Invoice	A request for payment for forty percent of the contracted energy savings	Within 30 days of PIR approval Before November 15, 2001	45 Days
6. 1st and 2nd Measurement and Verification Reports (M&V1 and M&V2 Reports)	Reports that present first-year verified energy savings and second-year verified energy savings, respectively	1 st due within 1 year of PIR approval 2 nd due within 2 years of PIR approval Before November 15, 2001	45 Days
7. 1st and 2nd Performance Invoices	1 st payment request based on M&V1 2 nd payment request based on M&V2	Within 30 days following approval of each M&V Reports Before December 30, 2001	45 Days

* The review cycle assumes submittals include all required information and are properly documented and summarized. The review will take longer for aggregated applications. The Administrator will halt the review cycle for inadequate submittals. For detailed project application problems left unresolved by the EESP, approval and funding will be withdrawn.

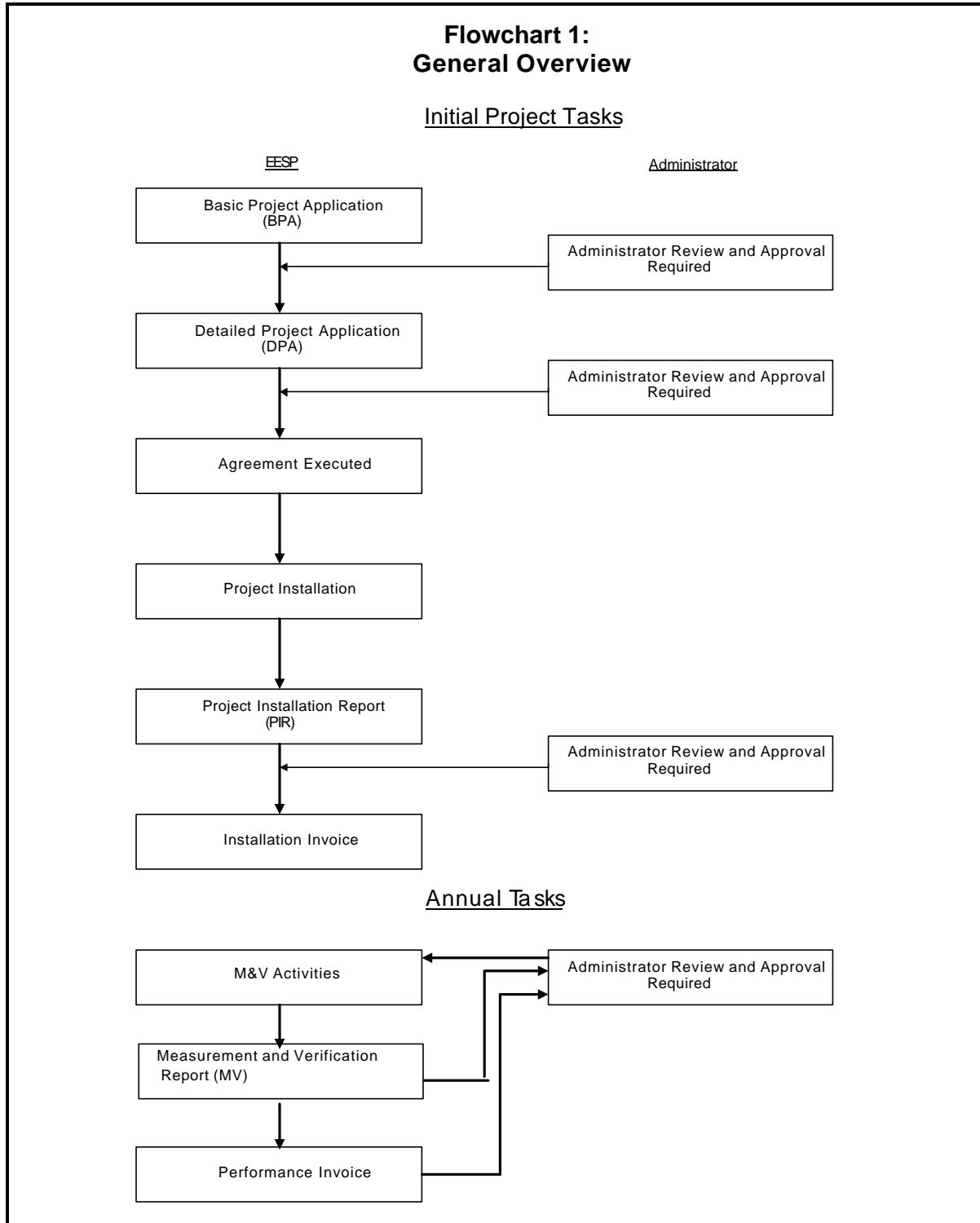
Application Period

Applications were accepted by utilities/Program Administrators for the 1998 Non-Residential Standard Performance Contract Program beginning on January 30, 1998 until all funds for the program are committed, or until October 1, 1999, whichever occurs first.

Project Application Sequence

The flow of a project through the phases of the SPC program is depicted in the following chart. This is a high level representation and does not show all of the program review and approval sequences. A description of the program application process and submittal requirements is included in the sections following the chart. The program contractual requirements for submittal, review, and approval are contained in the Program Procedures Manual.

The following flowchart presents an overview of project tasks:



Basic Project Application

The Basic Project Application (BPA) is the first step in the application process. Upon approval of the BPA, SPC program incentive funding in the amount of the total estimated incentive for the project is reserved for that project. The BPA ensures that the project meets the eligibility requirements for the program, and that the owner of the facility has authorized the EESP to proceed with the detailed development of a project for participation in the SPC program. Before completing and submitting a BPA, the EESP should consult with the administrator to determine if sufficient funding is currently available for the project.

The BPA includes the following:

- facility owner/(SCE/SDG&E/PG&E) customer name
- project name and address
- Administrator (SCE/SDG&E/PG&E) account number or meter number description of the project, i.e. energy efficiency measures to be installed
- estimated kWh savings
- preliminary energy savings estimate and calculations
- the total estimated SPC incentive payment
- a \$250 application fee, which is refunded upon installation of the project
- a "Site Control" form, signed by the owner of the facility, which indicates that the owner of the facility has given the EESP exclusive right to proceed with development of a project for participation in the SPC program. The purpose of the Site Control form is to prevent multiple EESPs from reserving SPC incentive funding for the same project.

Detailed Project Application

Upon Program Administrator's approval of a BPA, the EESP must submit a Detailed Project Application (DPA). In order to prevent expiration of the project incentive funding, a DPA must be submitted within 90 days of BPA approval for lighting projects, and within 150 days of BPA approval for all other projects.

The DPA includes all of the detailed Program Administrator needs to check and verify the estimated savings and estimated incentive payment, and enter into the SPC contract with the EESP (or customer). The EESP (or customer) and administrator enter into a SPC contract after administrator approves the DPA, and the approved DPA becomes a part of the contract.

The DPA includes the following:

- description of the project and all equipment
- a measurement and verification strategy for determining energy savings
- savings estimates and calculations

- a schedule and milestones for the project
- an installation deposit of 5% of the total estimated incentive amount
- the Customer Affidavit. EESPs are contractually required to provide the administrator with a signed affidavit from the customer which includes the following information: (1) EESP name; (2) project site and address; (3) estimated annual and life-cycle savings; (4) total project costs; (5) agreement by the customer to allow the administrator access to the project site for inspections and verification of energy savings; (6) indication of the measurement and verification protocol to be used to measure and verify savings; (7) the SPC incentive amount that will be paid to the EESP; (8) a statement from the customer indicating responsibility for the selection of the EESP and releasing the administrator from any damages resulting from the project, including but not limited to equipment malfunctions or energy savings shortfalls; and (9) indication of the existence and type of dispute resolution process between the EESP and customer.

Project Installation Report

Upon approval of the DPA, the EESP must install the project per the SPC contract terms. Once the project installation is completed, the EESP submits a Post Installation Report (PIR). The PIR must be submitted within 60 days after project installation but before November 15, 1999.

The PIR updates the DPA to reflect the project's actual as-built condition, document any measurement and verification activities performed to date, report actual project costs and revise project savings estimates. After approval of the PIR, the first incentive payment is made to the EESP based on the estimated savings approved in the PIR.

Measurement and Verification Reports

After a project is installed, the EESP must follow the approved measurement and verification strategy to determine the actual energy savings for the project. Prior to the end of each of the two performance years, the EESP submits an annual Measurement and Verification report that summarizes the measurement and verification results, and calculates the actual energy savings achieved.

After approval of the first year M&V report, the second incentive payment is made to the EESP. The second payment trues up the first incentive payment for the actually achieved energy savings. After approval of the second year M&V report, the third and final incentive payment is made to the EESP.

A.5 SPC ACRONYM GLOSSARY

EESP - Energy Efficiency Service Provider
SPC - Standard Performance Contract
BPA - Basic Project Application
DPA - Detailed Project Application
PIR - Project Installation Report

M&V - Measurement and Verification
INV - Invoice
CPUC - California Public Utilities Commission
PGC - Public Goods Charge
CBEE - California's Board For Energy Efficiency
HVAC&R - Heating, Ventilation, Air Conditioning, and Refrigeration
EEM - Energy Efficiency Measure
DSM - Demand Side Management
LE - Lighting Efficiency
LC - Lighting Controls
AH - Air Handler
AHU - Air Handling Unit
CH - Chiller
VSD - Variable Speed Drive
CFM - Cubic Feet per Minute

**B.1 EXCERPTS RELEVANT TO MARKET ASSESSMENT PORTION OF NSPC
EVALUATION, FROM ATTACHMENT 2 TO DECISION 98-04-063, INTERIM
OPINION: POLICY RULES AND REQUEST FOR PROPOSALS FOR ENERGY
EFFICIENCY PROGRAM ADMINISTRATORS, APRIL 23, 1998**

Under Policy Objectives

- II-2. “The objectives for energy-efficiency policies have changed from trying to influence utility decision makers, as monopoly providers of generation services, to trying to transform the market so that individual customers and suppliers in the future, competitive generation market, will be making informed and cost-effective energy choices.”
- II-3. “PGC-funded energy-efficiency programs should play a strategic and, ideally, transitional role in the development of a fully competitive market for energy-efficiency products and services.”
- II-4. “...Energy-efficient products and services are currently sought and obtained by customers in the private, competitive market. Yet, a variety of features or conditions of the structure and functioning of the current market, called market barriers, prevent customers from fully seeking and obtaining all cost-effective energy-efficient products and services. Success in transforming markets means reducing or eliminating market barriers in ways that allow the private competitive market to supply and customers to obtain all cost-effective products and services in a self-sustaining fashion - that is, without a continuing need for PGC-funded programs.”
- II-5. “Elements of such a fully transformed, well-functioning, and self-sustaining market include: (1) Workable competition that motivates rival sellers to supply a variety of energy-related products and services, including different levels of energy efficiency, that satisfy diverse customer needs and societal environmental goals at competitive prices; (2) A customer-friendly environment in which customers can readily obtain and process trustworthy information or professional services that allows them to compare the prices and energy-efficiency qualities of different services and products; (3) A positive legal and regulatory structure that (a) minimizes undue barriers to the entry of new service providers or the development of new and more efficient products; (b) provides for the internalization of environmental damages in energy prices; (c) provides for the expeditious redress of legitimate customer complaints related to defective energy-efficiency products and

services or fraudulent performance claims; (4) An innovative environment in which rival entrepreneurs compete and profit by innovatively discovering untapped energy-efficiency marketing opportunities; and (5) a learning environment in which customers learn how new energy-efficient investments and practices may better satisfy their needs and circumstances.”

- II-6. “Achieving the objectives of market transformation will require a balanced portfolio of programs that collectively will: (1) Promote a vibrant energy-efficiency products and services industry that can be self-sustaining without a continuing need for PGC-funded programs; (2) Encourage direct interaction and negotiation between private market participants (including energy-efficiency service providers) and customers, building lasting relationships that will extend into the future; (3) Transform the “upstream” market (e.g., manufacturers, distributors, retailers, and builders) so that energy-efficient products and services are made available, promoted, and advertised by private market participants; (4) Be in the broader public interest, with support for activities that would not otherwise be provided by the competitive market (e.g., capturing lost opportunities and avoiding cream-skimming); (5) Empower customers, especially residential and small commercial customers, with meaningful information on the costs and benefits of energy-efficiency measures; (6) Align the benefits of PGC programs with the customers providing PGC funds; (7) Transform markets in an expeditious manner, in view of the limited time horizon over which PGC funding is guaranteed; and (8) Maximize the societal and in-state energy-efficiency-related benefits achievable through PGC funding.”

Under Market Assessment, Evaluation, and Performance Measurement

- VI-1. “Market assessment, evaluation, and performance measurement under California’s policy objectives for PGC-funded energy-efficiency programs support the following activities: (1) The level of saving realized; (2) Measuring the cost-effectiveness; (3) The planning and design of programs, including providing up-front market assessments and baseline analysis; (4) Providing ongoing feedback, and corrective and constructive guidance regarding the implementation of programs; (5) Measuring indicators of the effectiveness of specific programs, including testing of the assumptions that underlie the explanation of sustainability that support the program; (6) Assessing overall levels of performance and success of programs designed to transform markets; (7) Informing decisions regarding compensation and performance incentives provided to Administrators and/or Implementors; and (8) Helping to assess whether, in specific markets, there is a continuing need for PGC-funded programs. The Commission expects the CBEE to gather information and conduct analysis in order to support these activities, both independently and in conjunction with Administrators of PGC-funded programs.”
- VI-2. “The primary purpose of market assessment and evaluation is to document changes in the structure and functioning of markets and assess the sustainability of these changes in the market and to evaluate the success of programs. These efforts should focus on measuring the market effects caused by programs and testing the assumptions and explanations that underlie them. These efforts logically begin with assessments of current markets and

evaluations of the market barriers that prevent the adoption of all cost-effective energy-efficient products and services through the natural operation of the private, competitive market. A critical area to document is the current scope, level, and comprehensiveness of energy-efficiency activities that are naturally being provided by the private, competitive market. This information must be combined with information on the operation of PGC-funded programs to help determine whether the market changes caused by the programs can be expected to be self-sustaining, if PGC funding is no longer available.”

- VI-3. “In view of possible imprecision associated with measuring market effects and the reduction in market barriers, it is necessary to: (1) Articulate specific theories about what market effects and reductions in market barriers specific interventions are expected to have, and test the assumptions that support these theories; (2) Measure a wide range of market indicators, both before, during, and after interventions, using a variety of methods--it is unlikely that there is a single indicator that can be used to determine whether a market has been transformed to the point where intervention is no longer necessary or appropriate; (3) Compare observed changes in market indicators and the sequence of these changes, to what would be expected if the program is working as intended, as well as to estimates of what would have occurred in the absence of the intervention (i.e., identify market effects caused by the program); (4) Link observations of market changes and market effects to reductions in market barriers; (5) Develop a system for ongoing feedback, so that indicators of market changes and market effects, as well as the theories which underlie them, can be assessed, or modified along the way; (6) Use forecasts and scenario analysis to assess likely future outcomes and inform interim decisions because it is not practical to wait for longer term results; (7) Focus efforts on the causal role of the program in increasing market adoption of measures, in addition to on estimating the net savings per measure adopted when quantifying environmental and resource benefits; (8) Recognize that changes can take place in multiple markets and market segments, and can result from multiple interventions over several years (rather than from one program in a single year); and (9) Recognize that some changes can take place in a market regardless of the intervention.”

C

PRELIMINARY PROCESS EVALUATION ISSUES

IMPORTANT NOTE: This appendix has been taken directly from Section 3 of the First Interim Report of this evaluation, which was **published August 16, 1998**. The purpose of this appendix is to provide documentation of the early process and policy issues raised in this evaluation. Some of the issues were addressed in the NSPC PY99 redesign process. A general discussion of the primary issues remaining as of this writing is presented in Section 3 of this report.

C.1 INTRODUCTION

This section is intended to provide early feedback to the California Board for Energy Efficiency (CBEE) on both the initial performance of the Nonresidential SPC program (NSPC) and the potential challenges associated with implementing the program during 1998 and into 1999. This summary is being prepared very early in the evaluation process and, importantly, very early in the implementation process. The reason for releasing a limited summary of issues at this early point in time is to ensure that the evaluation of this program is as relevant as possible to the CBEE's PY99 planning process.

The information provided herein is intended to highlight what appears to be working well with the program at this point in time; it is also intended to highlight several areas in which implementation and/or policy issues may need to be analyzed more fully and addressed during the 1999 program planning process. Our focus at this point in the evaluation process is on calling attention to issues that we think should be considered in the planning process rather than making specific recommendations regarding how these issues should be resolved.

As is noted in the following discussion, much of the difficult work, from an administrative perspective, is yet to come. Moreover, from a formal evaluation perspective, a very limited amount of primary research has been conducted thus far. As such, the feedback included here is based upon (1) a limited number of formal interviews with the interim program administrators, and (2) informal observations and discussions that the evaluators have had with various program stakeholders, *including the NSPC subcommittee of the Technical Advisory Committee to the CBEE*. As discussed in the introduction section to this report, detailed surveys of EESPs, customers, and other market actors remain to be completed as part of the evaluation. It is important to bear in mind that these early findings are necessarily subject to revision as the evaluation progresses.

This interim report includes discussions on the following topics:

- ***Section 3.2: Overview of Initial Program Performance*** -- elements that appear to have worked well thus far and should be maintained (as applicable) during the 1999 program year.
- ***Section 3.3: Potential Process-Related Challenges*** -- issues involving administrative and organizational aspects of the program that will need to be addressed in the upcoming planning process.
- ***Section 3.4: Potential Policy-Related Challenges*** -- issues that potentially involve the clarification and/or specification of public policy objectives relative to the implementation of the program during the 1999 program year and beyond.

Early feedback and observations on these topics are summarized in the sections that follow. In each case, we have endeavored to raise relevant questions that the CBEE may wish to consider during the 1999 program planning process.

C.2 OVERVIEW OF INITIAL PROGRAM PERFORMANCE

In order to avoid focusing solely on areas needing improvement, it is also useful to point out some of the positive aspects of program experiences to date. Importantly, people involved with the administration of the program are of the opinion that the program is running largely as expected and that, with some adjustments, the program could continue in similar fashion into 1999. The program requirements appear to be well documented and the process is, to date, reported to be working as intended. There are several successes that people have noted thus far.

- Given the time constraints under which the program was implemented, implementation appears to have progressed relatively smoothly.
- The utilities have, as interim program administrators, supported the implementation of the SPC programs and worked to market and inform customers and EESPs about the program.
- Web sites established by interim program administrators are reported to be effective in disseminating information, and expanded use of these sites may be beneficial. Specific suggestions for expansion, such as the inclusion of project application expiration dates, are already being addressed by the interim administrators.
- Workshops and promotional efforts have been successful in gaining considerable interest and active participation.
- The project selection and funding allocation process has worked smoothly and, generally, as expected.

C.3 POTENTIAL PROCESS-RELATED CHALLENGES

In this subsection, we discuss a number of process-related issues relevant to current NSPC program. Process-related challenges that have been raised thus far involving the program design and implications for the 1999 program year include:

- Early over-subscription in 1998 and possible implications;
- Concerns with Detailed Project Applications (DPAs);
- Issues related to Monitoring & Verification requirements;
- Program administration transition.

C.3.1 Early Over-Subscription and Possible Implications

All available funds for the 1998 program were committed for SCE & PG&E on 4/2/98 and 5/18/98, respectively. As of this date, SDG&E still has funding available.

Table C-1
Available Funding by Administrators

Administrator	Original Funding Available	Date All Funds Committed
SCE	\$13.3 M	4/2/98
PG&E	\$ 9.1M	5/18/98
SDG&E	\$ 6.4 M	Funding still available

Although the early over-subscription of the program indicates that there is considerable interest in the program, this occurrence has nevertheless also raised potential concerns relating to both the attainment of broad policy objectives and the design parameters of the program. While the precise reason behind this initial burst of interest in the program is not yet known, and indeed will not be known until after primary research with customers and EESPs is completed, it is nevertheless appropriate for the Board to consider the following questions in the design of the 1999 programs.

What are the implications of over-subscription for a sustainable EESP business development environment? -- It is possible that this early flood of applications and commitment of funds does not provide a steady source of available funding that would enable EESPs to establish an on-going marketing capability that is necessary for sustained private-sector development of energy efficiency investments.

Are the incentive levels appropriate? -- Questions have been raised as to whether the rapid exhaustion of available funds is an indicator of inappropriate pricing. Specifically, will there still be a strong level of activity if incentive levels were reduced and, if so, what relationship may be expected? The program has a broad set of accepted uses for the incentives, including the offset of measure costs, marketing costs, and project development costs. The appropriate level of incentives may depend, in part, upon the precise cost barriers that the program seeks to address.

What are the potential impacts in terms of uneven administrative workflow? -- Because the initial Basic Project Applications (BPAs) were received within a relatively narrow time window, and because few Detailed Project Applications (DPAs) have been submitted in advance of their deadlines, some interim program administrators anticipate a similar flood of DPAs that will need to then be reviewed, revised, re-reviewed and approved. Because the DPAs involve potentially much greater work during the review process than the BPAs, this may create bottlenecks in the workflow.

Is the total pool of NSPC dollars set at an optimal level? -- The total pool of dollars could be set based upon a variety of considerations. Broadly speaking, the total amount should be based upon what is needed to achieve the specific market effects that are hoped for, subject to other funding constraints. Interim criteria, which will be explored in more detail pending the availability of relevant data, may include: the estimated amount of naturally-occurring projects in

the market; the desired amount of program-induced projects; the number of EESP participants targeted; the number, size, and type of customers targeted; and the fraction of estimated marketing, incremental measure, or M&V costs to be offset. Too few dollars could lead to continued over-subscription (a level of which may or may not be acceptable), too many dollars could lead to over-dependence of markets on public-purpose dollars and fewer resources for other nonresidential programs. A balance must be struck.

Should program dollars be targeted to obtain desired program effects? -- The pricing mechanisms incorporated into the program can have a powerful influence in directing participants to the types of measures installed, market segments targeted, and overall level of innovation achieved. There is considerable room for tightening pricing criteria beyond the current broad end-use differentiation.

Was early subscription driven by 1997 “pipeline” projects? -- Early subscription for the 1998 program may have been partly a transition issue as projects that were developing in later 1997 with the expectation, or hope, of traditional utility rebates may have been redirected into the 1998 NSPC. It is also possible that uncertainty over continued public-purpose funding of efficiency projects may have stimulated interest in obtaining funding for projects sooner rather than later.

Initial Recommendations:

- *Examine the objectives that underlie the incentive design, and consider ways in which the incentive may be targeted to obtain desired program effects. This effort must be closely coordinated with the issue of total funding levels and per-customer incentive caps (see discussion under Potential Policy-Related Challenges).*
- *Determine the approximate size of the program early in the program planning process. This will allow the focus to shift toward how to use these dollars most effectively to meet program design goals.*
- *Consider developing an approach for releasing funds for proposals on a semi-regular basis (e.g., monthly or quarterly) in order to create a more even and on-going source of potential funding.*

C.3.2 Concerns with Detailed Project Applications (DPAs)

Since the BPAs are just now starting to come in, it is important to highlight the fact that there is relatively little “hard” program experience at this stage of the program. At the time of our initial

interviews with the interim administrators, a large number of the DPAs simply had not yet come in. Interim program administrators noted that much of the difficult work will begin with the arrival of these DPAs. At this point interim program administrators and other stakeholders have raised three primary issues

What percent of BPAs will come to fruition? -- Opinions vary as to the percent of BPAs that will actually evolve into DPAs and, subsequently, fully implemented projects. Some have expressed the opinion that many of the BPAs were submitted to reserve funds and that real projects may not materialize. At present, it appears too early to tell. Suggestions to address this uncertainty have included (1) shortening time windows between the BPA approval and the DPA submittal, and/or (2) adding interim deliverable requirements as projects progress toward the DPA completion deadlines.

Will there be a flood of DPAs all at once? -- Echoing the workflow concern outlined above, the interim program administrators are expecting to receive a large volume of DPAs in the near future. SCE, for example, expected to receive a total of 55 DPAs over a two month period. As such, there is some uncertainty about the potentially large volume of review work that will be required.

What will be the quality of the submitted DPAs? -- The quality of the few DPAs received thus far has been lower than expected, and this has necessitated a fair amount of re-working of submitted applications. Because of this experience, there is some concern that the overall quality of DPAs that will be submitted in upcoming months will also be low, the net effect of which could be increased transaction costs for everyone involved. This factor, if widespread, may result in increased workload for the interim program administrators and may also result in delays for EESPs in implementing projects and building momentum in their business. Importantly, it remains to be seen whether this is simply a start-up issue or whether this may reflect larger program design issues.

Initial Recommendations:

- *Monitor closely the quality of applications submitted and consider adding interim deliverables on the part of EESPs.*
- *Consider conducting additional statewide workshops on specific aspects of the DPAs that appear to be consistently lower in quality (see discussion of Monitoring & Verification, below).*

C.3.3 Issues Related to Monitoring & Verification Requirements

The Monitoring & Verification (M&V) requirements are viewed as providing an opportunity for EESPs to "prove" the level of savings projected and build long-term credibility with existing and future customers. Importantly, the M&V requirements of the program are also expected to pose challenges to both the EESPs and the interim program administrators.

Early feedback from customers has, according to interim program administrators, included comments to the effect that the NSPC is "more difficult than other utility programs."

Quality of M&V plans -- Many of the questions received by the interim program administrators thus far have focused on M&V issues. Notably, it is reported that many of the issues raised are quite basic and may reflect a general lack of experience and familiarity with the types of standards

required during the M&V process. It was suggested that it would be helpful to hold additional workshops, specifically addressing the M&V requirements of the program.

Costs of implementing M&V plans -- As explained by some people involved with the design of the program, at least part of the rationale behind the higher incentive levels for HVAC / Refrigeration measures is the fact that M&V costs for these measures are likely to be substantially higher. Some skepticism has been expressed as to whether the EESPs and customers involved with the program fully understand the cost implications of the M&V requirements.

Initial Recommendations:

- *Develop and conduct statewide training on the topic of M&V, to familiarize EESPs with the M&V requirements and to serve as a forum for connecting M&V specialists and EESPs that need M&V expertise.*
- *Consider preparing and disseminating case-study information on successful early applications of the M&V requirements.*

C.3.4 Program Administration Transition

With the delay in releasing the RFP for a new program administrator, and the potentially compressed time frame available for a smooth transition, concerns have been raised with respect to specific transition logistics that have yet to be resolved. The issues that have been raised thus far include:

- What is the expected role of the interim program administrators in planning and preparing for 1999 programs?
- What is the expected period of overlap between current (interim) program administrators and the selected new program administrators for training purposes, data transfer, etc.?
- What is the process for establishing project funding priorities relative to BPAs submitted in 1999 that wish to apply for 1999 funding?

Initial Recommendations:

- *Develop and review with interim program administrators a complete transition plan that will ensure a smooth and timely transfer to the newly-selected program administrator.*

C.4 POTENTIAL POLICY-RELATED CHALLENGES

This subsection provides an initial discussion of policy-related issues associated with the current version of the NSPC program. Policy-related challenges that have been raised thus far involving the program design and implications for the 1999 program year include:

- Definitions of customers, as related to participation limits
- Size of customers served
- High percentage of customer sponsors
- Structure of Contracts between EESPs and customers

C.4.1 Definition of Customers, as Related to Participation Limits

One implicit policy objective for the program is to encourage broad participation. As such, limits have been established to ensure that no single EESP or customer receives a disproportionate share of available funding. Initially, these limits specified that a single EESP could not secure more than 30% of available project funds, and that a single customer could not secure more than 15% of available funds within each of the interim administrator's programs. The customer limit has since been changed to specify that a single customer may not receive more than \$400,000 in funds.

What defines a customer? -- There are a number of possible definitions for a "customer" within this context. Options include (1) defining a customer as a single cluster of buildings, (2) defining a customer as a single building, or (3) defining a customer as the entire corporate entity. Within the definition that uses corporate entity, the question then arises as to whether or not this should be across services areas or within a single service area.

Internal definitions of "customer" may vary by administrator -- At present, the definitions that are in use may vary by administrator. Any discrepancy could create considerable confusion in the marketplace. Although this issue will change with the appointment of a single statewide administrator, it may be prudent for the Board to clarify both the policy objective underlying this program design element and the definition of a "customer."

Initial Recommendations:

- *Clarify public policy objectives and intent behind the market share limitations and establish uniformly consistent "customer" definitions.*

C.4.2 Size of Customers Served

The program does not appear to be structured to encourage the participation of small-to-medium-sized end users. Specifically, the 200,000 kWh threshold requirement limits participation to larger customers, although aggregation of small customers is allowed under certain conditions. The primary question that arises is:

Is there an explicit policy objective to promote access to the program by smaller customers? -

- Although aggregation of loads from multiple facilities and/or end users is possible in order to qualify, this option does not appear to have been pursued actively thus far.

Initial Recommendations:

- *Clarify public policy objectives regarding customer size limitations and access of smaller customers to NRSPC Program funds. Determine whether the NSPC or another program approach will be utilized in 1999 to address the CBEE's goals for small and medium nonresidential customers. If the NSPC is determined to be the program vehicle of choice for these customers, then significant changes in program requirements may be necessary.*

C.4.3 High Percentage of Customer Sponsors

An unexpected and potentially important issue that has emerged from 1998 program experiences is the high percentage of projects in which customers are listed as acting as their own EESPs.

Whether this is a positive or negative development depends, at least in part, upon the intended policy objectives of the program. Some of the issues that emerge, and are also discussed in our Program Theory discussion, include:

Are these truly "customer-driven" projects? -- Because this information represents simply the name of the firm entered in a space on the BPA, it is not yet known to what degree EESPs are or are not involved with customer-sponsored projects. If EESPs are behind a significant number of projects, this could contribute to the development of the EESP industry. However, this could also raise equity implications and market share considerations. This will be explored more fully in interviews with customers and EESPs.

Are these projects achieving "net" energy savings, or other desired market effects? -- As with EESP-promoted projects, we cannot assume that the customer-driven projects would not have gone forward even in the absence of an SPC program. But even if these projects do not result in net impacts, there may be other desired market effects that are being attained.

What is the relative importance of the program objectives to promote third-party EESPs and to procure cost-effective energy efficiency? -- If, for example, the objective is to stimulate private investments in energy efficiency, then the emergence of customer-sponsored projects may be a positive development. If, on the other hand, the objective is specifically focused on encouraging

the development of third-party EESPs using performance-based contracts, then the program may need additional participation restrictions.

Initial Recommendations:

- *Clarify policy objectives with respect to customer-sponsored projects.*

C.4.4 Structure of Contracts Between EESPs and End Users

It is not yet known what types of contracts are being implemented between the EESPs and the end users. Although this evaluation study is designed to address this topic through primary research, we have not yet collected the data necessary for analysis. In addition, no information on these arrangements is collected or tracked by the interim program administrators.

While it is not yet known how these arrangements are structured, it does not seem safe to assume that these are necessarily structured as performance-based contracts. The principal question, which is also noted in our discussion on program theory is:

Is the public policy objective to promote performance contracting, specifically, or is it to encourage the development of EESPs and their relationships with customers? -- As structured, the program does not explicitly require performance-based contracts between EESPs and the end users. The program does require a performance-based contract between the administrator and the EESP. If an explicit policy objective for the program is in fact to stimulate performance contracting, this may not be ensured under the current policy design. In our opinion, it is not necessary to require performance contracting between EESPs and customers in order to achieve the broader market effects that are discussed in our program theory discussion in Section 2.

Initial Recommendations:

- *Clarify policy objectives with respect to performance contracting and expectations for contract structure, if any, among EESPs and end-users.*

D

REVIEW OF SOURCES FOR PROGRAM THEORY DEVELOPMENT

IMPORTANT NOTE: This appendix has been taken directly from Addendum 2 of Section 2 of the First Interim Report of this evaluation **published August 16, 1998.**

D.1 THEORY-RELATED RESULTS OF BACKGROUND RESEARCH CONDUCTED TO DATE

We have utilized two primary sources of information in our search for initial theories of the market effects of the NSPC: written sources, in the form of both published literature and informal memoranda and white papers; and verbal sources, in the form of initial interviews with program designers and administrators.

D.1.1 Assessment of Selected Written Sources

Key written sources we have reviewed to date include the following:

- White paper by the TAC on the market barriers addressed by an SPC approach (circa, late autumn 1997, also included within comments filed by the MarketPlace Coalition to the CPUC on December 12, 1997).
- Memorandum on Evaluation of the NSPC by a subset of TAC members (December 23, 1997).
- Addendum to December 23rd memorandum by Bruce Cenicerros of the CEC.
- Paper by Goldman, et al., for the 1998 ACEEE Summer Study on California SPC programs entitled, “California’ Nonresidential Standard Performance Contract Program.”
- Paper by Schiller, et al., for for the 1998 ACEEE Summer Study on California SPC programs entitled, “Standard Performance Contracting: A Tool for Both Energy Efficiency and Market Transformation?”.
- Paper by Dayton, et al., for the 1998 ACEEE Summer Study on ESCO industry trends entitled, “The Energy Services Company (ESCO) Industry: Analysis of Industry and Market Trends.”
- Evaluation report conducted by LBL of the Phase I New Jersey SPC program (LBL-37157, Volumes I and II, July, 1995).

Though clearly there are other sources of relevance to our objective, our intent is not to spend time with an exhaustive literature review of anything and everything that might be related to the NSPC concept, but rather to focus on materials that seek, in their own admission, to address at least some aspect of NSPC program theory.

Below we provide brief assessments of the information provided in the these sources that is *directly related to NSPC program theory and hypotheses*. This is not meant as a critique of the sources, since few of them set out NSPC program theory and hypotheses as their goals. Rather, our intent is simply to glean what we can from these for our current purpose.

D.1.2 White paper by the TAC on the market barriers addressed by an SPC approach (circa, late autumn 1997, also included within comments filed by the MarketPlace Coalition to the CPUC on December 12, 1997).

This paper sought to discuss the ways in which an SPC program could address market barriers as defined in the 1996 Scoping Study. This paper provided some useful, early discussion of some of the macro-level EESP/customer relationship goals. However, this paper tends to state, rather than hypothesize, that the program addresses a large number of barriers. The paper also tends to discuss barriers from the point of view of how ESCOs traditionally address them, rather exploring how the SPC intervention would induce ESCOs and customers to change in ways that would fundamentally alter their existing relationships. In addition, there is little discussion of how the SPC itself reduces or eliminates barriers in a lasting, attributable way.

D.1.3 Memorandum on Evaluation of the NSPC by a subset of TAC members (December 23, 1997).

This memorandum was written explicitly to address issues related to evaluation of NSPC. The paper focuses mostly what the authors call “primary” criteria. These are all macro-level outcomes estimates, e.g., changes across years in the ratio of total performance contracting dollars divided by PGC/SPC funds, changes in annual dollar volume of energy-efficiency products and services, etc. These are potentially useful indicators, however, the discussion lacks consideration of the effects of nonprogram factors on interpretation of changes in these indicators. Four “secondary” indicators are also called out, namely,

1. Number and characteristics of energy efficiency service providers operating in the markets targeted by the standard performance contract.
2. The number and types of customers participating in performance contracting.
3. Project and measure diversity.
4. Customer perception of the energy efficiency services industry.

The paper then goes on to discuss how changes in these primary and secondary criteria should be interpreted with respect to several market barriers. This discussion is useful, however, there is not adequate attention paid to attribution issues. For example, it is stated that:

“If the overall level of market activity and energy-efficiency savings are increasing relative to the level of PGC funds provided, this means that customers have been persuaded to undertake projects with decreasing levels of public subsidy. Thus, customer knowledge of and confidence in energy efficiency and its benefits must be increasing since they are assuming a greater proportion of the costs and risks associated with the implementation of measures.”

Though the relationship between the outcome variable described above and key customer barriers may be true, the fact that the outcome occurs does not prescribe that the barriers have been

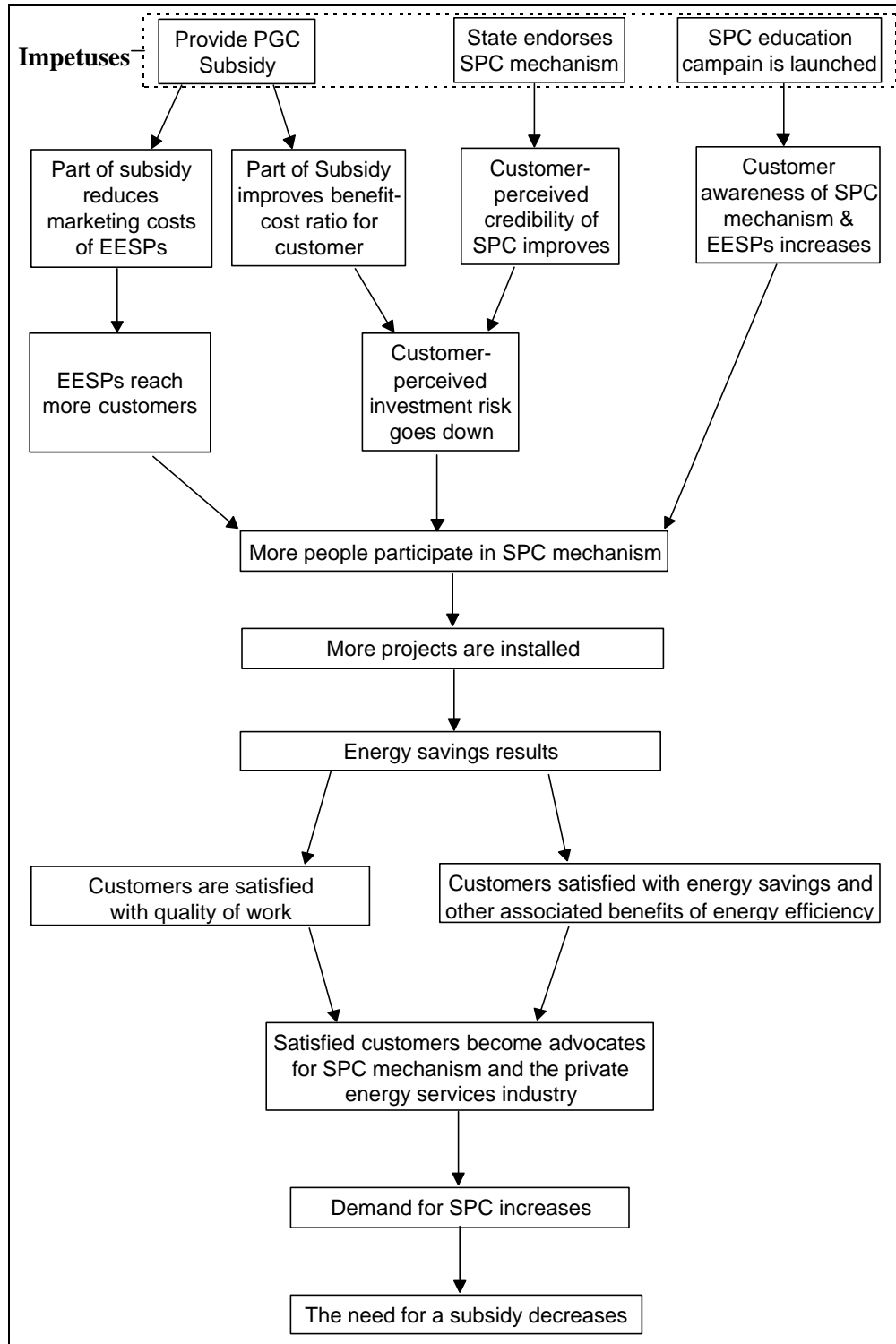
reduced. Again, a variety of other factors unrelated to the SPC intervention may be responsible for the observed changes in the outcome variable. For example, energy prices may have increased, or large federal performance contracting initiatives may be responsible for a portion of the observed changes, or changes in EESP marketing practices (such as bundling electric commodity and efficiency services) may be more attributable to deregulation of selected monopoly services than to the SPC intervention itself, or any other of a number of factors and combinations of factors may be responsible for the observed macro-level changes.

In summary, the paper contains valuable contributions, however, its measurement approach is limited somewhat by the old truism about regression models, i.e.: *correlation is not causality*.

D.1.4 Addendum to December 23rd memorandum by Bruce Cenicerros of the CEC.

In addendum to the memorandum discussed above, Mr. Cenicerros seeks to address some of what he considered to be its limitations. Primarily, Mr. Cenicerros presents the importance of theory-based evaluation, encourages parties to further develop program theories, and provides an initial cause and effect model (shown in the figure below) while noting that much more needs to be done.

Possible Cause and Effect Theory for SPC Program



D.1.5 Paper by Goldman, et al., on California SPC programs entitled, “California’ Nonresidential Standard Performance Contract Program,” to be presented at the 1998 ACEEE Summer Study

This paper describes the development of the NSPC, discusses program design mechanisms and goals, presents some initial program results, and addresses a number of the program evaluation issues. The focus of our summary here is to capture those aspects of the paper that are relevant to program theory and evaluation issues.

Below are excerpts from the paper that discuss the rationale for several key program design elements.

End-Use Pricing

“The following two factors were central to the CBEE’s recommendations to establish end-use-specific posted prices: (1) stimulate entry and participation by EESPs, yet encourage customers to provide significant cost contribution for projects; and (2) provide higher incentives for end uses where historically it has been more difficult to achieve significant market penetration rates for high-efficiency equipment.”

The Two-Year Pay-for-Performance Contract Term with Standardized M&V

“For those customers who submit their own projects, the requirement to demonstrate savings is expected to increase their awareness and interest in the principles and practice of monitoring energy savings. Reliance on standard M&V protocols is intended to reduce transaction costs associated with developing reliable savings evaluation techniques.”

Market Share and Funding Limitations

“Affiliates of the utilities that are operating in the service territory of their host utility are limited to 15 percent of the host utility’s program funds budgeted for incentives (i.e., excluding administrative costs) in the NSPC programs. A single EESP cannot receive more than 30 percent and a single customer cannot receive more than 15 percent of the program funds in each utility’s service territory. The 15 percent limit on funds available to affiliates of the host utility represented a compromise between those that advocated banning participation by affiliates because of market power concerns (including preferential treatment by the host utility) and those that argued it was unfair and unwise to limit competition and customer choice...The 30 percent limit on funds available to a single EESP was intended to increase the number of EESPs participating in the program...The 15 percent limit on funds available to a single customer reflected two concerns: (1) PGC funds should be broadly available to all customers; for this reason, California utilities have often established maximum incentives in their customized rebate programs; and (2) PGC funds in the NSPC program are intended as part of a transitional strategy to a future in which customers no longer need ratepayer funds to stimulate adoption of cost-effective energy-efficient technologies and practices.”

Summaries of some of the key NSPC evaluation issues from this paper are presented in the excerpts below:

Importance of Effects on EESPs

“We agree that the most critical issue facing the NSPC program is its impact on California’s private-sector energy-efficiency industry. While a range of plausible hypotheses can be developed regarding the ultimate effects of the NSPC programs on the market barriers facing customers, none of these is likely to be borne out if the programs do not first lead participating EESPs to change their marketing practices and business characteristics in relatively lasting ways.”

Overall Evaluation Goals

“...Assessing the vibrancy of California’s private-sector energy-efficiency industry is complicated by ambiguity about what exactly is the market that the NSPC program seeks to transform. The evaluation should address three broad issues: (1) the program’s impact on the market for performance contracting, (2) the program’s impact on the growth and expansion of the EESP industry, and (3) the program’s impact on reducing customer market barriers to pursuing cost-effective energy-efficiency investments in the nonresidential sector. The focus of the evaluation may depend to some extent on one’s definition of the market and market barriers being addressed by the NSPC program.”

Is the NSPC Program stimulating the market for Performance Contracting and should it?

“At an operational level, the impact of the NSPC program on the market for performance contracting as well as the contractual and business relationships between EESPs and customers would appear to be a logical focus for an evaluation. It is important to note that despite the pay-for-performance payment structure of the program, *there is no requirement that an EESP enter into a performance contract with a customer as a condition of participation in the program*. Thus, at a conceptual level, there are three potential outcomes: (1) customers could enter into performance contracting arrangements with ESCOs that are project sponsors, (2) ESCOs may develop other contracting arrangements with host customers that do not involve any additional pay-for-performance requirements other than that required by the Interim Administrators, and (3) customers can participate directly acting as project sponsors (and who by definition do not enter into a performance contract with themselves!). Thus, the program provides an interesting “market test” of customer interest in performance contracting in a favorable environment (e.g., financial incentives).”

What is the NSPC programs’ overall impact on the California EESP industry?

“At a structural level, the role of the program in nurturing the businesses of EESPs, in general, and the ESCO industry as a prominent class of EESPs, in particular, would also appear to be an appropriate focus for evaluation...One way to think about the SPC program

is that the PGC funds effectively ‘subsidize’ the marketing and business development costs of EESPs...”

What is the NSPC programs’ impact on reducing customer market barriers?

“At bottom, the role of the program in improving the availability, lowering the cost, enhancing the reliability, increasing customer’s awareness and knowledge, increasing the value customers place on, and increasing customer’s ability to acquire energy-efficiency measures and services represents the ultimate focus for evaluation...”

Confounding factors: The impact of restructuring on EESPs.

“One of the most vexing set of issues facing evaluators of the California nonresidential SPC program is the influence of changes in the energy-efficiency services market that are occurring as a result of electricity industry restructuring...In this context, one way to think about the NSPC program is that it provides financial incentives that can be used by those retail energy suppliers that want to “sell” energy- efficiency-related products and services in conjunction with commodity supply...At a macro level, potential measures of the “success” of an SPC-type program include: (1) successful entry by EESPs, (2) market share for retail suppliers offering energy-efficiency services compared to those that focus on “commodity-only” supply, and (3) penetration rates in various market segments for energy-efficiency “value-added” services and providers...”

D.1.6 Paper by Schiller, et al., on California SPC programs entitled, “Standard Performance Contracting: A Tool for Both Energy Efficiency and Market Transformation?” to be presented at the 1998 ACEEE Summer Study

This paper describes the California standard performance contract (SPC) programs, including: results to date, effectiveness of the program concept, SPC program features, and options to make the SPCs both market transformation and energy efficiency resource programs. The paper concludes with analysis of the effectiveness of SPC programs as market transformation tools and analysis of program features and target markets of “key importance.” Although the paper indicates that these programs are not specifically designed as market transformation programs, the authors state that they do, however, have “elements that are conducive to transforming the energy efficiency market” - which they then describe. The following list, from the paper, outlines the program goals from the authors’ perspective:

SPC Program Goals

- Bolster increased levels of energy efficiency;
- Foster and enhance relationships between private energy efficiency service providers (EESPs) and customers through financial incentives tied to project performance;
- Promote the entry of additional EESPs and increased activity of existing EESPs through specific outreach activities;

- Reduce traditional market barriers (e.g., lack of knowledge about life-cycle costs, concerns about comfort reductions, etc.) through customer and Project Sponsor education, marketing, and other reactions;
- Promote comprehensive projects in historically under-subscribed markets and technologies that address multiple end uses through pricing signals and program rules;
- Promote energy-efficiency activities that will continue in the absence of program incentives, and
- Educate (non-residential) customers about the importance of M&V, with the ultimate goal of transferring M&V oversight activities from the Administrator to the customer in the long term.

The paper's conclusion, qualified by the authors' understanding that there is "little information at this early stage of the program," states that the program appears to be working towards their stated goals. The authors maintain, however, that evidence of post-program persistence is not clear and may become even less clear as California's marketplace gets more complicated.

D.1.7 Excerpts from Paper by Dayton, et al., on ESCO industry trends entitled, "The Energy Services Company (ESCO) Industry: Analysis of Industry and Market Trends," to be presented at the 1998 ACEEE Summer Study

This paper presents several hypotheses on the ESCO industry that are relevant to the NSPC evaluation. These hypotheses are listed below and followed by the corresponding conclusions the authors use to bolster these hypotheses:

- *Few "independent" ESCOs will survive re-structuring with significant market share;*
"Few ESCOs are still operating that are not affiliated with utilities, equipment manufacturers, or marketers, although many of these companies are prospering under their new parents. These developments support our first hypothesis that few "independent" ESCOs will survive restructuring with significant market share."
- *Utility-owned ESCOs and retail energy service companies (RESCOs) will emerge from restructuring with a market share in energy-efficiency services that is at least comparable to that of equipment and controls manufacturers and power marketers;*
"Currently, dozens of utility-owned RESCOs are active in traditional and emerging markets targeted by ESCOs. Some of these RESCOs, in part due to their ESCO acquisitions, are already formidable competitors in certain markets (e.g., K-12 schools, federal sector). Other RESCOs appear to be struggling with developing products and services based on their core competencies while at the same time "re-inventing" their utility-oriented organizations and staff—whose experience is drawn primarily from regulated environments—into sales-oriented, demand-driven businesses. We believe that the combination of market pressures, merging of ESCO and utility cultures, management,

and staff, and various ad hoc bidding alliances will produce a smaller field of battle-hardened “new RESCOs.” Over time, we expect that our first two categories of companies, “independent” ESCOs” and early-state utility-owned RESCOs, will effectively merge into a single group and become indistinguishable as the number of “independent” ESCOs continues to shrink and failing RESCOs withdraw from the field.”

- *The energy-efficiency services industry will continue to grow, although the percentage reached through performance contracting will shrink. Performance contracting, long a hallmark of the ESCO industry, will become less of a distinguishing feature.*

“Historically, ESCOs have relied on performance contracting as a way to: (1) distinguish themselves from other energy-efficiency service providers offering design and equipment installation (typically backed by a manufacturer’s guarantee) or energy consulting services, and (2) overcome customer’s concerns regarding the success of proposed energy-efficiency projects in reducing energy costs. In the language of economists, ESCOs used performance contracting to overcome customers’ principal-agent concerns—the risk that savings would not be realized and lack of trust in the service provider—by tying ESCO compensation to demonstrated energy savings. Ironically, we would argue that the “successes” of performance contracting have partially undermined its future. Over the last decade, an increasing number of customers (and project financiers) have become more familiar and comfortable with the kinds of services offered by ESCOs as well as their ability to perform. As such, customers are less likely to demand performance contracts, particularly for projects involving certain types of efficiency measures (e.g., lighting equipment changes).”

ESCO Industry Trends

This section of the paper takes a broad look into the energy service company industry. It breaks down the industry into specific entities and lays out the roles and futures of each entity. These entities include “traditional ESCOs,” “retail energy service companies (RESCOs),” and “other entities with ESCO operations.” This section provides a useful set of hypotheses concerning the different ESCO categories which can be compared with the roles of the ESCOs and EESPs in the SPC program. The current market for ESCO-type work is assessed and predictions are made concerning the future of ESCOs in each category.

Several hypotheses are made concerning the future of the energy services market. These hypotheses are that 1) energy efficiency services will grow as a market as a whole, but 2) performance contracting will decline as a percentage of energy efficiency services. This latter hypothesis is offered for several reasons, primarily that: customers are less willing to share savings with their ESCO providers and, because of the past successes of the performance contracting industry in proving to customers that predicted savings occur, there will be less need for additional measurement and guarantees on future projects. This hypothesis concludes that “traditional ESCOs, that have relied on performance contracting as their ‘brand identity,’ will have to continue to adapt if they expect to thrive in the future.”

The Institutional Sector

Performance contracting as a component of the ESCO business framework is characterized in the paper as follows:

”Historically, the institutional sector has accounted for about 60% of ESCO activity. Over 35 states have enacted legislation that enables schools, universities, and local and state governments to undertake energy-efficiency investments using performance contracting approaches. Moreover, the underlying market drivers that have allowed performance contracting to gain an important foothold in these markets are still quite compelling: public and nonprofit agencies continue to face severely constrained capital budgets, aging buildings and equipment in need of modernization, incentives to reduce operating costs, and lack of in-house technical expertise.”

Also related to the status of the performance contracting industry and ESCO stability is the government market for these services, “in the local government market, performance contracting also appears to be growing as dozens of solicitations have been issued and many have been awarded to experienced ESCOs.”

The Federal Market

The paper also accounts for the “proliferation” of performance contracting and energy efficiency services offered to ESCOs from the federal market.

“In seeking to break out of their more traditional markets, ESCOs have long looked to the federal market for energy-efficiency services. Until recently, however, few ESCOs have had the fortitude to expend significant marketing resources in this difficult-to-penetrate sector... That process has yielded a series of pre-qualification rounds followed by regional competitions to develop “short lists” of experienced ESPC contractors. The arguments for selling into the federal market include:

- Federal legislation and Executive Orders that direct agencies to reduce energy consumption by 20% and 30% per square foot by 2000 and 2005 relative to a 1985 baseline;
- Market potential: estimated \$5 billion investment in energy-efficiency projects needed to meet EPAct and Executive Order 12902 requirement (Allenby 1996);
- The need to replace/upgrade infrastructure;
- Significant efficiency opportunities evident in federal facilities;
- Congressional preferences for private capital over public appropriation, explicit in EPAct and other authorizations; and
- Commitments to eventual privatization of energy/water/waste management.”

Total Energy Management

The paper addresses a topic that has recently been looked at as the “holy grail” for ESCOs, the concept of “total energy management.”

“Another oft touted new market for ESCOs lies in providing “total energy management” solutions. A number of analysts have predicted that commercial and institutional customers will be receptive to supplier offers to provide whole-building or end-use energy services and that total energy management product and service packages will become a significant new market for ESCOs, RESCOs and others (LeBlanc 1995; Lenssen & Newcomb 1996). In this approach, suppliers provide “full-service” energy supply and efficiency improvements on defined services at a unit price (e.g., chilled water, compressed air, steam, refrigeration).”

Several difficulties in selling “total energy management” are also described:

“One problem confronting those seeking to sell a comprehensive package of energy services is consumers’ lack of familiarity with integrated arrangements as well as their relatively low level of concern about energy and facility management (Lenssen & Newcomb 1996). High technology companies may be more sensitive to these issues and particularly to questions of power quality, which may be one reason some high-tech firms have expressed interest in comprehensive outsourcing options (Lenssen 1998). Differences in contract duration for commodity supply and financing of efficiency-related projects poses another stumbling block for those offering total energy management service packages. Many large energy consumers are looking for only short term (i.e., one- to two-year) energy supply agreements and they do not want to be locked into one supplier for contracting periods required to service debt on major capital investments in high-efficiency facility renovations and HVAC equipment. At present, total energy management services represents more of a potential market opportunity, one which has not yet proven substantial market demand or profitability.”

Future Scenarios for Performance Contracting

The paper closes with a discussion of the factors underlying the authors’ “optimistic” and “pessimistic” scenarios for the future of performance contracting. These factors are summarized by the authors in the following table.

Table D-1. The Future of Performance Contracting? (Dayton, et al., 1998)

	“Optimistic” Indicators	“Pessimistic” Indicators
Ratepayer or Publicly-Funded Energy Efficiency	<ul style="list-style-type: none"> - Several state PUCs are using public-benefit charge (PBC) funds to develop Standard Performance Contract programs 	<ul style="list-style-type: none"> - PBC funding levels lower than utility DSM; limited funds may be allocated primarily to “upstream” market transformation initiatives or smaller customer markets
State & Local Government Market	<ul style="list-style-type: none"> - Number of local governments have recently issued & awarded RFPs for performance contractors - Large remaining market potential 	<ul style="list-style-type: none"> - Local governments susceptible to slow & irrational procurement practices brought on by political influences - Most attractive efficiency opportunities have already been completed in schools and larger public buildings, leaving capital-intensive work that cannot pay for itself out of savings
Federal Market	<ul style="list-style-type: none"> - ESPC likely to be re-authorized with continued political support - Significant performance contracting work in the “pipeline” - Privatization initiatives will provide additional stimulus 	<ul style="list-style-type: none"> - Customers will continue to rely primarily on utility services contracts (e.g., Area-wide contracts) - ESPC awards have produced few actual projects yet
Outsourcing & Industrial Markets	<ul style="list-style-type: none"> - Increasing interest in outsourcing among plant managers in trade press - Compelling economic arguments in favor of minimizing “overhead energy” costs - Restructuring removes barriers to comprehensive supply/efficiency packages 	<ul style="list-style-type: none"> - Market is almost entirely speculative with little evidence of real commitment - Disaggregated procurement remains prevailing practice
Price Trends, Paybacks, & Market Saturation	<ul style="list-style-type: none"> - Customer choice has captured attention of business decisionmakers more than energy conservation ever did - ESCOs have developed business in low-price regions 	<ul style="list-style-type: none"> - Building owners & operators concerned primarily with “first cost” not lifecycle - As energy prices seek commodity levels, economic payback to customers will become longer - Remaining building e-effic. opportunities must be depleted

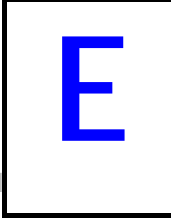
D.1.8 Evaluation report conducted by LBL of the Phase I New Jersey SPC program¹

This evaluation, conducted by Lawrence Berkeley Laboratory, analyzed PSE&G's Standard Offer program up through December of 1994. Below are important points from the evaluation report that are of relevance to the theory-based evaluation of the California Nonresidential SPC Program:

- Market response to the Standard Offer was estimated to be small compared to DSM program potential, with < 5% captured in most C/I target markets (with a few notable exceptions). ESCOs also reported that certain program features discouraged participation (e.g., lengthy contract terms, penalties for non-performance).
- The Standard Offer succeeded in generating a high level of interest among energy service providers, being particularly successful at reaching industrial customers.
- Many ESCOs noted that the program had been more difficult to sell to customers than anticipated, with long sales cycles and low proposal to closing ratios. This indicated that ESCOs were incurring substantial up-front and project development costs. Other factors indicated by ESCOs that negatively affected program participation included: poor or uncertain economic conditions in New Jersey, customer perceptions that the program was too risky, stringent contract provisions, and the time and cost involved in developing acceptable M&V protocols for DSM measures that were not covered in the statewide M&V protocols.
- The level of competition among ESCOs and other service providers varied by market sector, with the most intense competition having been for large C/I customers. Larger C/I customers reported that they received an average of four proposals from ESCOs, while smaller customers received an average of only one proposal.
- Overall, customer sponsors and host customers were very satisfied with the Standard Offer program, with this satisfaction driven mostly by the financial incentives paid by PSE&G.
- Total resource costs for the Standard Offer program, leveled out over the contract term of each facility, averaged 6.8 ¢/kWh overall, which was about 74% of the utility's then avoided supply costs.

PSE&G's energy services subsidiary, PSCRC, was a very active program participant in both the large and small C/I markets. PSCRC had projects that accounted for about 43% of program funds, as well as providing construction and permanent financing to many projects sponsored by other ESCOs and customers.

¹ Goldman, et al., 1995. Evaluation of Public Service Electric & Gas Company's Standard Offer Program, Volumes I and II, LBL-37157, July.



ALL SURVEY INSTRUMENTS

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E.1 BASELINE SURVEY

Telephone Survey
Nonresidential Standard Performance Contract Program - Evaluation and
Baseline Study

Baseline End-Users, CA and Non-CA

Prepared for
CBEE and SCE

Prepared by
XENERGY Inc.

Interviewer ID _____

Sample Type [CA Vs. Non-CA] _____

Utility
[CA Sample Only,
Will be PG&E, SCE, or SDG&E]: _____

Survey Number _____

CREATE VARIABLE STYPE, IF SAMPLE TYPE=CALIFORNIA, STYPE=1, ELSE STYPE=2

REMINDER: CHECK CA SAMPLE PULL AGAINST LIST OF NSPC PROGRAM PARTICIPANTS, EXCLUDE PROGRAM PARTICIPANTS FROM SAMPLE

INTRODUCTION

SCREEN1

[WHEN RECEPTIONIST ANSWERS]:

[LARGE COMPANY]: May I have Engineering, please?

[SMALL COMPANY]: May I speak with the Facilities Manager, please?

[OTHER DEPARTMENTS TO ASK FOR]:

- | | |
|----------------------|---------------------|
| Maintenance | General Services |
| Operations (Manager) | Public Relations |
| Plant Services | Purchasing |
| Building Manager | Planning Department |

LEAD IN

INTRO1

Hello, this is _____, calling from Freeman, Sullivan & Co. in San Francisco on behalf of the California Public Utilities Commission. We are conducting a study on issues related to deregulation of energy services in California. May I speak with the person in your organization who is most responsible for energy-related decisions for your facilities?

[NOTE: YOU SHOULD BE LOOKING FOR THE PERSON RESPONSIBLE FOR EQUIPMENT PURCHASES, ENERGY EFFICIENCY AND ENERGY SUPPLY]

- Yes..... 1
- Respondent not available now.....2
- Respondent coming to phone3
- No such person.....4
- Refused.....5

IF INTRO1 = 1 GO TO INTRO2_2, IF INTRO1 = 2 GO TO CALL BACK SCREEN IF INTRO1 = 3 GO TO INTRO2_1, ELSE ASK INTRO1A

INTRO1A

[IF NO SUCH PERSON]: May I speak with the person in your organization who is responsible for decisions regarding construction, renovation, or operation of your physical facilities?

INTRO1B NAME OF CONTACT: _____

INTRO1C TITLE: _____

IF RESPONDENT IS NOT AVAILABLE, GET HIS/HER NAME AND TITLE; MAKE ARRANGEMENTS TO CALL LATER

INTRO2_1

WHEN RESPONDENT GETS ON THE LINE: Hello, this is _____, calling Freeman, Sullivan & Co. on behalf of the California Public Utilities Commission. We are conducting a study on issues related to deregulation of energy services in California.

(INTRO 2_2 – does not have “Hello, this is...” again.)

Are you familiar with your organization's recent energy-related decisions such as those concerning equipment purchases, energy efficiency and energy supply?

YES: PROCEED TO FINAL LEAD IN PARAGRAPH (INTRO3).

NO: INTRO2A

INTRO2A

Who would be the best person in your organization to speak with about energy-related decisions?
 _____ ASK TO BE CONNECTED WITH THIS INDIVIDUAL.

INTRO2B

May I please speak with _____ (insert from Intro2A)
 (IF CONTACT COMES TO PHONE, ASK INTRO2_1)
 (IF CONTACT NOT AVAILABLE, SCHEDULE CALLBACK)

INTRO3

We are speaking with selected businesses and organizations to learn about their current energy practices and preferences. A group of energy policy makers will use information from this study to improve energy policies and programs for nonresidential customers. This interview should take about 20 minutes. Is this a good time for you or is there a better time I can call you back?

- Yes.....1
- No, schedule callback.....2
- No, refused.....3

(IF YES, GO TO SC1)

SC1. First, what is your job title? [DON'T READ]

- Facilities Manager 1
- Energy Manager 2
- Other facilities management/maintenance position 3
- Chief Financial Officer..... 4
- Other financial/administrative position 5
- Proprietor/Owner..... 6
- President/CEO..... 7
- Other (Specify) ____ (SC1_OTH)____ 8
- Refused..... 99

IF CA SAMPLE (STYPE=1) ASK SC2a, IF NON-CA SAMPLE (STYPE=2) ASK SC2b

- SC2a.** From what local company does this facility receive electric distribution service? [READ LIST]
- PACIFIC GAS & ELECTRIC..... 1
 - SOUTHERN CALIFORNIA EDISON..... 2
 - SAN DIEGO GAS & ELECTRIC... 3
 - [DO NOT READ] None of these.....4
 - [DO NOT READ] Don't Know..... 5
 - [DO NOT READ] Refused.....6

- SC2b.** What is the name of the local electric distribution company that delivers electricity to this facility?
[RECORD VERBATIM]
CREATE VARIABLE WITH RESPONSE CALLED "UTILITY"

ESTABLISHMENT CHARACTERISTICS

Now I'd like to ask you a few questions about your organization.

- EC1.** What kind of facility is at [ADDRESS OF FACILITY IN SAMPLE DATABASE]? [DO NOT READ. IF NECESSARY, PROBE CLOSEST CATEGORIES]
- Primary or Secondary School..... 1
 - College or other post-secondary school2
 - Office.....3
 - Hospital4
 - Non-Food Retail.....5
 - Restaurant.....6
 - Government7
 - Grocery/Food Sales/Service8
 - Lodging.....9
 - Warehouse..... 10
 - Religious 11
 - Industrial Manufacturing..... 12
 - Industrial Assembly 13
 - Other (SPECIFY IN **EC1_OPN**) 14
 - Don't know.....98
 - Refused..... 99

- EC2.** How many square feet does **your organization occupy in this facility?**
- 1. (EC2_1) Enter sq. ft. (Range = 10 – 10,000,000)
 - 8. DON'T KNOW
 - 9. REFUSED

EC3. Does your organization.....

- Own this space 1
- Lease this space.....2
- Own a portion and lease the remainder3
- Don't Know 98
- Refused..... 99

IF EC3 = 2 OR 3, GO TO EC4. ELSE, SKIP TO EC5.

EC4 (ASKED FOR CA SAMPLE ONLY UNTIL 10/21/98)

Does your organization pay its own electric bill directly to [PACIFIC GAS & ELECTRIC/
SOUTHERN CALIFORNIA EDISON / SAN DIEGO GAS & ELECTRIC] or is electricity provided
under your lease arrangement?

- Pay own electric bill..... 1
- Part of the lease arrangement2
- Don't know..... 98
- Refused..... 99

IF EC4=2 ASK EC4A, IF EC4 = 1 ASK EC5. ELSE **TERMINATE**].

EC4a Is energy included as a separate line item in your lease's monthly expenses allocation?

- Yes..... 1
- No.....2
- Don't know..... 98
- Refused..... 99

IF EC4a=1 ASK EC5, ELSE GO TO EC6

EC5. What is your best estimate of your average monthly electric bill?

- EC5_1 ENTER \$ PER MONTH _____ (Range = 10 – 10,000,000) 1
- Don't know..... 98
- Refused..... 99

EC6. Is this facility...[READ LIST]

- Your organization's only location 1
- A franchise location.....2
- A headquarters location of an organization with multiple locations.....3
- A branch location of a larger organization4
- [DON'T READ] Don't Know 98
- [DON'T READ] Refused 99

IF EC6 = 98 OR 99 TERMINATE, ELSE ASK EC7

EC7. What is the number of full-time equivalent workers of all types employed by your organization at this facility?

- EC7_1 ENTER NUMBER _____ (RANGE = 1 – 100,000) 1
- Don't Know..... 98
- Refused..... 99

EC9a. Approximately how many years old is this facility?

- EC9A_1 _____# of Years (Range = 1 – 100) 1
- Don't Know98
- Refused99

EC9b. Approximately how many years has it been since the last major building retrofit?

- EC9B_1 _____# of Years (Range = 0 – 100)..... 1
(0 = Never retrofitted)
- Don't Know98
- Refused99

EC10. And how many years has your organization been in this facility?

- EC10_1 _____# of Years (Range = 0 – 100)..... 1
- Don't Know98
- Refused99

ELECTRIC SUPPLY CHOICES

ES1. (ASK FOR CA SAMPLE ONLY)

Are you aware that you can choose a new supplier of electricity in most of California?

- Yes..... 1
- No.....2
- Don't know..... 98
- Refused..... 99

ES2. On a scale from 0 to 10, where 0 is completely uninformed and 10 is very well informed, how would you rate your personal knowledge of electric industry restructuring?

- 0 1 2 3 4 5 6 7 8 9 10
- Don't know..... 98
- Refused..... 99

IF EC6=2,3, OR 4, ASK ES3a. ELSE ASK ES3b

ES3a. (ASK ONLY FOR RESPONDENTS OF MULTI-SITE ORGANIZATIONS) Approximately what percentage of the sites operated by your company are in locations where you can select an electric supplier other than the local utility?

- ES3A_1 Record Value in Percent _____(Range = 0-100) 1
- Don't Know..... 98
- Refused..... 99

SKIP TO ES4

ES3b. (ASK ONLY FOR SINGLE-SITE-LEVEL RESPONDENTS) Do you have the option of selecting an electric supplier other than your local utility?

- Yes..... 1
- No.....2
- Don't know..... 98
- Refused..... 99

ES4_1. (IF RESPONDENT IS IN CA SAMPLE, SAY:) “The electric industry in California has been restructured so that you are now able to purchase power from suppliers other than your utility.”

ES4_2. (IF RESPONDENT IS IN NON-CA SAMPLE, SAY:) “In the near future the electric industry may be restructured so that you will be able to purchase power from suppliers other than your local utility. In addition, several states are carrying out retail pilots enabling customers to choose their electric supplier for some of their sites.”

ES4a. Have you received any offers to purchase electricity from any suppliers other than your local utility?

- Yes..... 1
- No.....2
- Don't know..... 98
- Refused..... 99

IF ES4a=1 ASK ES4b, ELSE SKIP TO ES4c

ES4b. Approximately how many offers have you received?

- ES4B_1 Enter # of offers _____(Range 1-100).....1
- Don't Know..... 98
- Refused..... 99

ES4c. Which of the following best describes the activities your company has pursued with respect to deregulation? Would you say it....[READ LIST]

- Has selected an electricity supplier for one or many sites 1
- Is actively shopping for a new electricity supplier2
- Is waiting to see how the market unfolds.....3
- Does not intend to switch electricity suppliers 4
- Has not really evaluated the situation yet5
- Don't know..... 98
- Refused..... 99

IF ES4c=1 THEN ASK ES5a, ELSE IF ES4c=2 or 3 SKIP TO ES6, ELSE SKIP TO ES7

ES5a. Thinking about the main site for which you made a decision about electric supply, did you select a new supplier or did you choose to remain with your electric distribution utility or its unregulated affiliate?

- Selected a new supplier 1
- Selected their utility/affiliate.....2
- Don't know..... 98
- Refused..... 99

IF ES5a=1 ASK ES5b, ELSE SKIP TO ES11

ES5b. What is the name of your new supplier?

- Record name (ES5B_OPN)_____
- Don't know..... 98
- Refused..... 99

SKIP TO ES11

NON-CHOOSERS

ES6. Which statement best fits your stage in the decision making process? Are you.. [READ LIST (1-4), ROTATE START]?

- Planning to seriously investigate offers soon..... 1
- Planning to stay with current utility for the foreseeable future.....2
- Waiting for the market to start operating before you do anything else3
- Currently investigating or considering offers.....4
- [DON'T READ] Don't Know..... 98
- [DON'T READ] Refused 99

ES7. What are the most important reasons your organization has not signed-up with a new electricity supplier ? (RECORD UP TO 3 REASONS VERBATIM)

- ES7 (1st reason)
- ES7_2 (2nd reason)
- ES7_3 (3rd reason)

ES8. Did you receive any offers for electricity that included energy-efficiency products or services for your organization as part of the package?

- Yes..... 1
- No.....2
- Don't know..... 98
- Refused..... 99

ES9a. How important would you say that it is that offers from electricity suppliers include energy efficiency services? Would you say that it is: [READ LIST]

- Very Important..... 1
- Somewhat Important.....2
- Somewhat unimportant.....3
- Very unimportant.....4
- [DON'T READ] Don't know/No Answer 98

IF ES9a=1,2,3, or 4, ASK ES9b, ELSE ASK IM1

ES9b. And why is that? RECORD VERBATIM

SKIP TO IM1

ES10. [DROPPED FROM LATE DRAFT, SKIP TO IM1]

CHOOSERS

ES11. Did you choose your electric supplier solely on the basis of price or did you consider some other factors along with price in making your decision?

- Price only 1
- Considered other factors in addition to price2
- Don't know..... 98
- Refused..... 99

IF ES11=1 SKIP TO ES13a, ELSE ASK ES12

ES12. What were the most important factors in your decision to select your new supplier?

[DON'T READ] [ALLOW MULTIPLES]

1. Consolidated or other Billing services
2. Energy Efficiency and/or Energy Management services
3. Metering or Power Quality Services
4. Easy to Understand Offer
5. Guaranteed Savings
6. Had good experience with the company in the past.
7. Company has a good reputation.
8. Responsiveness of company
9. Other (specify) **ES12 OTH**
10. Don't Know
11. Refused

IF ES12=2 SKIP TO ES13b, ELSE ASK ES13a

ES13a. Did you receive any offers for electricity that included energy-efficiency products and services for your organization as part of the package?

- Yes..... 1
- No.....2
- Don't know..... 98
- Refused..... 99

ES13b. How important would you say it is that offers from electricity suppliers include energy efficiency services? Would you say it is:

- Very Important..... 1
- Somewhat Important.....2
- Somewhat unimportant.....3
- Very unimportant.....4
- Don't know..... 98
- Refused..... 99

ES14. [DROPPED]

PROGRAM PARTICIPATION AND EFFICIENCY-RELATED IMPROVEMENTS

IM1. In the past 2 years, has your organization at this facility taken part in energy efficiency programs offered by your local electric or gas utilities, EPA's Green Lights and Energy Star programs, or the programs of any other organization such as federal, state, or local governments?

- Yes..... 1
- No.....2
- Don't know..... 98
- Refused..... 99

IF IM1=1 ASK IM1_1, ELSE GO TO IM3

IM1_1. Which kinds of programs? [DO NOT READ. ACCEPT MULTIPLES]

- Utility Programs..... 1
- EPA Green Lights or Energy Star (Federal)2
- Other Federal.....3
- State Government.....4
- Local Government5
- Don't know.....6
- Refused.....7

IF IM1_1=1 ASK IM2, ELSE GO TO IM3

- IM2.** As part of your facility's participation in utility programs, have you received any financial rebates or information related to efficiency services, or both?
- Information only (an audit) 1
 - Rebate only2
 - Both3
 - Don't Know/None 98
 - Refused..... 99

- IM3.** In the past two years, has your organization taken any specific actions to improve its energy efficiency or otherwise reduce energy consumption?
- Yes 1
 - No.....2
 - Don't Know 98
 - Refused..... 99

IF IM3=1 ASK IM4, ELSE SKIP TO IM8

- IM4.** OK, please tell me in which of the following areas you've taken these energy saving actions?
[ACCEPT MULTIPLES, READ LIST.]
- Installed efficient lighting equipment 1
 - Installed efficient HVAC or refrigeration equipment2
 - Installed efficient motors or variable speed controls3
 - Reengineered manufacturing or process systems to save energy.....4
 - Installed energy management control system or other controls5
 - [Don't Read] Other (specify).....6
 - [Don't Read] Don't Know.....7
 - [Don't Read] Refused..... 8

IF IM4=98, 99 ASK IM5a, ELSE ASK IM4_1 AND IM4a_11

[TEXT FOR EACH OF SIX CATEGORIES ABOVE THAT WERE SELECTED:
CATEGORY FROM IM4 ABOVE, e.g., "LIGHTING"]

ASK IM4_1 AND IM4_11 FOR EACH CATEGORY MENTIONED IN IM4:

IM4a_1. Let's take the [ANSWER FROM IM4].
Could you tell me what specific actions your organization took?
Record actions verbatim:_____

IM4a_11. Approximately what percentage of your facility's square footage was affected by this action?
_____Percent
Enter 888 for DON'T KNOW
Enter 999 for REFUSED

IM4b. And as a percentage of your facility’s annual electricity consumption, by how much do you estimate these energy savings actions will reduce your annual consumption?
 [IF FACILITY HAS INCREASED ITS SIZE, BASE THE SQUARE FOOTAGE ON ORIGINAL SIZE OF FACILITY]

IM4B_1 Enter Percent _____	1
Don't Know.....	98
Refused.....	99

IM5a. Did you work with any outside companies to have these projects completed?

Yes.....	1
No.....	2
Don't Know.....	98
Refused.....	99

IF IM5a=1 ASK IM5c, ELSE SKIP TO IM6a.

IM5b. [DROPPED]

IM5c. And can you provide the names of any of these firms?
 RECORD UP TO 3 COMPANY NAMES VERBATIM
 (IM5C, IM5C_2, IM5C_3)

IM6a. And, overall, what were the most important reasons that you took these energy saving actions? [DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM RECORDING.]

IF IM6a = 13 OR 14, SKIP TO IM6c

For IM6B, construct new list of choices that were not chosen in IM6A.

IM6b. Are there other reasons? [DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM.]

	IM6a	IM6b
Lower energy (operating) cost	1	1
Enhance productivity	2	2
Improve quality of merchandising environment	3	3
Take advantage of rebates offered by utilities	4	4
Reduce organization’s environmental impact	5	5
Improve organization’s environmental image	6	6
***Replaced old equipment	7	7
***Reduce energy consumption	8	8
Other (Specify) ___IM6A_OTH & IM6B_OTH	12	12
NONE	13	13
Don't Know	14	14
Proceed to next question	15	15

IF IM2=2 or 3 ASK IM6c, ELSE ASK IM7

- IM6c.** And how important were utility rebates in your organization’s decision to implement these energy saving actions? Would you say that, without the rebates, you would have: [READ LIST]
- Definitely implemented the energy saving actions anyway 1
 - Probably implemented the energy saving actions anyway2
 - Probably would not have implemented them.....3
 - Definitely would not have implemented them4
 - [DON’T READ] Did not receive rebates for any of these projects.....5
 - [DON’T READ] Don’t Know 98
- IM7.** Overall, how satisfied are you with the outcome of these energy saving actions? Would you say you are... [READ LIST]
- Very satisfied..... 1
 - Somewhat satisfied.....2
 - Neither satisfied, nor dissatisfied3
 - Somewhat dissatisfied4
 - Very dissatisfied5
 - [Don’t Read] Don’t know/no answer..... 98
- IM8.** In the last two years, were there any actions to improve energy efficiency or otherwise reduce energy consumption that were identified but not undertaken?
- Yes..... 1
 - No2
 - Don’t know..... 98
 - Refused 99

IF IM8=1 ASK IM8a, ELSE SKIP TO DM0

IM8a. And, overall, what were the most important reasons that you did not take these energy saving actions? [DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM RECORDING.]

For IM8B, construct new list of choices that were not chosen in IM8A.

IM8b. Are there other reasons? [DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM RECORDING.]

	IM8a	IM8b
Other priorities for capital spending	1	1
Amount of savings did not justify added investment costs	2	2
No funds available for investment	3	3
Energy savings were too uncertain	4	4
Could not obtain financing for investment	5	5
Needed more information to make decision or convince management	6	6
Not enough management time to oversee project	7	7
Would have took too much time to get a convincing analysis	8	8
Uncertainty created by deregulation	9	9
Expectation that energy prices would decrease	10	10
Other (Specify)___ IM8A_OTH & IM8B_OTH	11	11
NONE	12	12
Don't Know	13	13
Proceed to next question	14	14

ENERGY-RELATED DECISION MAKING

DM0. Now I'd like to ask some questions about how your organization makes its energy-related decisions.

IF EC6=1, ASK DM1_1

DM1_1. Which of the following best characterizes who has ultimate authority in your organization with respect to energy-related projects? Would you say that it is: [READ LIST]

- One individual at this facility 1
- One individual at parent organization.....2
- A group of individuals at this facility3
- [DON'T READ] Don't Know 98
- [DON'T READ] Refused 99

IF DM1_1 = 1 OR 2 ASK DM2, IF DM1_1 = 3, SKIP TO DM3 ELSE SKIP TO DM6

IF EC6=2, 3 OR 4, ASK DM1_2

DM1_2. Which of the following best characterizes who has ultimate authority in your organization with respect to energy-related projects? Would you say that it is: [READ LIST]

- One individual at this facility 1
- One individual at parent organization.....2
- A group of individuals at this facility3
- A group of individuals at parent organization.....4
- A group of individuals at both this facility and the parent organization5
- [DON'T READ] Don't Know 98
- [DON'T READ] Refused 99

IF DM1_2 = 1 OR 2, THEN ASK DM2, ELSE SKIP TO DM3

DM2. What is the title of this individual? (DO NOT READ. ACCEPT ONLY ONE.)

- Individual is Interviewee (Use SC1, NO NEED TO REPEAT) 1
- Facilities Manager2
- Other facilities management/maintenance position3
- Chief Financial Officer.....4
- Other financial/administrative position5
- Proprietor/Owner.....6
- President/CEO.....7
- Other (Specify)_**DM2_OPN**8
- Don't Know 98
- Refused..... 99

IF DM2=1 SKIP TO DM4_1, ELSE SKIP TO DM4

DM3. What are the titles of these individuals? (DO NOT READ. ACCEPT MULTIPLES.)

- Facilities Manager 1
- Energy Manager2
- Other facilities management/maintenance position3
- Chief Financial Officer.....4
- Other financial/administrative position5
- Proprietor/Owner.....6
- President/CEO.....7
- Other (Specify)__**DM3_OTH**.....8
- Don't Know9
- Refused..... 10

SKIP TO DM5

DM4. How easy or difficult would you say it is to convince this individual to approve investments in energy efficiency related projects?

- Very easy..... 1
- Somewhat easy.....2
- Somewhat difficult3
- Very difficult4
- Don't know/no answer..... 98

IF DM4=3 OR 4, ASK DM4a, ELSE SKIP TO DM6

DM4_1. [IF DM2=1, USE ALTERNATIVE PHRASING]: How easy or difficult would you say that it is to convince you to approve investments in energy efficiency related projects?

- Would you say that it is:
- Very easy..... 1
 - Somewhat easy.....2
 - Somewhat difficult3
 - Very difficult4
 - Don't know/no answer..... 98

IF DM4_1=3 OR 4, ASK DM4A_1

DM4a. And what would you say are the main reasons that it is difficult to convince this individual to approve energy efficiency related investments? [DO NOT READ. ALLOW VERBATIM RECORDING.]

DM4A_1. [IF DM2=1, USE ALTERNATIVE PHRASING: And what would you say are the main reasons that it is difficult to convince you to approve energy efficiency related investments?]
[DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM RECORDING.]

For DM4B, construct new list of choices that were not chosen in DM4A.

DM4b. Are there other reasons? [DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM RECORDING]

	DM4a	DM4b
Other priorities for capital spending	1	1
Amount of savings often do not justify added investment costs	2	2
No funds available for investment	3	3
Energy savings are usually too uncertain	4	4
Can not obtain financing for investments	5	5
Usually need more information than is available to make decision	6	6
Not enough management time to oversee project	7	7
Takes too much time to get a convincing analysis	8	8
Other (Specify) DM4A_OTH/DM4A1OTH/DM4B_OTH	9	9
None	10	10
Don't Know	11	11

DM5. How easy or difficult would you say it is to convince this group to approve investments in energy efficiency related projects? Would you say that it is:

- Very easy..... 1
- Somewhat easy.....2
- Somewhat difficult3
- Very difficult4
- [DON'T READ] Don't know/no answer 98

IF D5=3 OR 4, ASK DM5a, ELSE SKIP TO DM6

DM5a. And what would you say are the main reasons that it is difficult to convince this group to approve energy efficiency related investments?

[DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM RECORDINGS.]

DM5b. Are there other reasons?

[DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM RECORDING.]

	DM5a	DM5b
Other/competing priorities for capital spending	1	1
Amount of savings often do not justify added investment costs	2	2
No funds available for investment	3	3
Energy savings are usually too uncertain	4	4
Can not obtain financing for investments	5	5
Usually need more information than is available to make decision	6	6
Not enough management time to oversee project	7	7
Takes too much time to get a convincing analysis	8	8
Difficult to get group agreement on energy investments	9	9
Other (Specify) __DM5A_OTH & DM5B_OTH	12	12
None	13	13
Don't Know	14	14
Proceed to next question	15	15

DM6. And has your organization assigned responsibility for controlling energy usage and costs to any of the following? [READ LIST]

- An in-house staff person..... 1
- A group of staff2
- An outside contractor3
- No.....4
- [DON'T READ] Don't Know..... 98
- [DON'T READ] Refused 99

DM7. Are energy-efficiency related improvements typically considered on an annual basis or on an ad hoc basis as opportunities arise, or both? [SELECT ONLY ONE]

- Annual basis only 1
- Ad hoc, as they arise, only2
- Both3
- Don't Know..... 98
- Refused..... 99

DM8. Does your company maintain a separate annual budget for energy-efficiency related improvements, or must money for such investments come out of other budgets?

- Have annual budget for energy-efficiency related improvements 1
- Money must come from other budgets.....2
- Don't Know..... 98
- Refused..... 99

DM9. Has your organization developed a policy for the selection of energy-efficient equipment?

- Yes 1
- No.....2
- Don't Know..... 98
- Refused..... 99

IF DM9 = 1 ASK DM10, ELSE SKIP TO DM11.

DM10a. Does this policy or specification require the use of the following kinds of equipment?
[READ LIST FROM DM10]

- DM10.**
- a. Electronic ballasts or T8 Lamps ____
 - YES 1
 - NO.....2
 - DONT KNOW3
 - b. Lighting controls..... ____
 - c. High-efficiency packaged air conditioners or chillers ____
 - d. High efficiency motors..... ____
 - e. Variable speed motor controls, where appropriate..... ____
 - f. Energy management control systems ____
 - g. Other kinds of equipment, please specify **(DM10 OPN)**..... .. ____

DM11. Does your organization apply long-term investment analysis to energy equipment selection such as estimates of payback periods, life cycle costs or internal rate of return?

- Yes 1
- No.....2
- Don't Know..... 98
- Refused..... 99

IF DM11= 1 ASK DM12, ELSE SKIP TO DM13.

DM12. What is the investment criterion you use? [ACCEPT ONLY ONE. PROMPT IF NECESSARY]

Payback period..... 1
 Internal rate of return.....2
 Life-cycle cost analysis3
 Other, please specify _____ (**DM12 OPN**) 4
 Don't know/ Refused.....5

IF DM12=1 THEN ASK DM12a, IF DM12=2 THEN ASK DM12b, IF DM12=3 THEN ASK DM12c,
 ELSE SKIP TO DM13

DM12a. How many years or less must the project payback be?

DM12A_1. # of Years..... 1
 [ROUND DECIMALS TO NEAREST QUARTER:
 .25 = 3 MONTHS
 .50 = 6 MONTHS
 .75 = 9 MONTHS]
 Don't Know..... 98
 Refused..... 99

SKIP TO DM14

DM12b. And what is the minimum percent rate of return required for energy-efficiency related projects?

DM12B_1. Enter Percent..... 1
 Don't Know..... 98
 Refused..... 99

SKIP TO DM14

DM12c. And what factors are typically included in your organization's life-cycle cost analysis?
 RECORD FACTORS VERBATIM

SKIP TO DM14

DM13. What factors does your organization use to make energy equipment selections?
 RECORD FACTORS VERBATIM

DM14. Are the financial criteria used to make energy-related equipment selections the same as those
 used by your organization to make other capital investments?

Yes..... 1
 No.....2
 Don't Know..... 98
 Refused..... 99

IF DM14=2 THEN ASK DM14a, ELSE SKIP TO EO0

DM14a. Please explain how the criteria for other capital investments are different from those used for energy equipment selections?
RECORD REASONS VERBATIM

EFFICIENCY OFFERS

E00. Now I'd like to ask you a question about energy efficiency service offers you may have received.

E01. In the past two years, has your organization been approached by any companies offering to provide services to improve the efficiency of your facility's energy usage?

- Yes 1
- No.....2
- Don't Know..... 98
- Refused..... 99

IF E01 =1 ASK E02, ELSE SKIP TO PC0

E02. And what specific types of services to improve the efficiency of your facility's energy usage were offered?

RECORD VERBATIM



FAMILIARITY WITH AND USE OF PERFORMANCE CONTRACTING

PC0. Now I'd like to ask some questions about any experience your organization may have with a specific type of energy efficiency related contract.

- PC1.** Have you heard of the term "Energy Performance Contracting"?
- Yes..... 1
 - No.....2
 - Don't Know..... 98
 - Refused..... 99

IF PC1=1 ASK PC2, ELSE SKIP TO PC3_0

PC2. What would you say are the defining characteristics of an Energy Performance Contract? [DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM RECORDING.]

- Vendor is paid on a shared savings basis..... 1
- Payment is tied to actual energy savings measured over a multiyear period2
- Other (SPECIFY) **PC2_OTH**3
- Don't Know.....4
- Refused.....5

PC3_0. For the purposes of this survey, we are defining Energy Performance Contracting as follows: a retrofit or new construction project in which energy savings are measured and verified and the company performing the work is paid only from total dollar savings actually produced by the energy saving project.

PC3. In the past two years, has your organization been approached by any companies offering an Energy Performance Contract?

- Yes..... 1
- No.....2
- Don't Know..... 98
- Refused..... 99

IF PC3=1 ASK PC4A, ELSE SKIP TO SP0

PC4a. How many Energy Performance Contract offers have you received over the past two years?

- PC4A_1. # of Offers [RANGE = 1 – 500]..... 1
- Don't Know..... 98
- Refused..... 99

PC4b. Which of the following statements best describes how far you went in the decision making or project development process ? [READ LIST]

- Heard presentation but did not request proposal(s)..... 1
- Asked for and received formal proposal(s) but did not enter contract negotiations....2
- Tried to negotiate contract but failed to come to agreement.....3
- Negotiated and signed contract4
- [DON'T READ] Don't Know 98
- [DON'T READ] Refused..... 99

IF PC4b=1, 2 OR 3 ASK PC5, ELSE IF PC4b=4 SKIP TO PC6a

PC5. What were the main reasons you did not enter into an Energy Performance Contract?
[RECORD REASONS VERBATIM]

SKIP TO SP1

PC6a. And how many contracts did you enter into?

- One..... 1
- More than one.....2
- Don't Know..... 98
- Refused..... 99

IF PC6A = 1, SKIP TO PC6A3. IF PC6A = 2, ASK PC6. ELSE SKP TO PC6B

PC6. (If more than one contract)

And in what year did you enter into these Energy Performance Contracts?

- PC6A_1** 1st Contract - ____Year 1
- PC6A_2** 2nd Contract - ____Year (9999 =Don't know year of second contract)2
- Don't Know..... 98
- Refused..... 99

PC6a_3. (if PC6A = 1)

And in what year did you enter into this Energy Performance Contract?

- PC6A_4 _____Year of contract
- Don't Know..... 98
- Refused..... 99

PC6b. What are the main reasons that you chose an Energy Performance Contract over other forms of project development? [IF MORE THAN ONE ENERGY PERFORMANCE CONTRACT, FOCUS ON THE LARGEST ONE]

[RECORD REASONS VERBATIM]

PC6c. And what firm did you select for the Energy Performance Contract?

[RECORD NAME OF FIRM VERBATIM]

PC6d. Overall, how satisfied are you with the outcome of this Energy Performance Contract? Would you say you are....[READ LIST—FOCUS ON THE LARGEST CONTRACT]

- Very Satisfied 1
- Somewhat Satisfied2
- Somewhat dissatisfied3
- Very dissatisfied4
- [DON'T READ] Don't know/Refused..... 98

PC6e. And as a percentage of your facility's annual electricity consumption, by how much do you estimate the energy saving measures associated with this performance contracting will reduce your annual consumption?

- PC6E_1. Enter Percent _____ 1
- Don't Know..... 98
- Refused..... 99

AWARENESS AND ASSESSMENT OF SPECIFIC SERVICE PROVIDERS AND PROVIDER TYPES

SP0. Now I'd like to ask you a few questions about different types of energy services providers.

SP1. Can you tell me the names of any companies that specialize in providing energy-efficiency services, energy performance contracting or electricity itself?

RECORD ALL RESPONSES VERBATIM -- SEPARATE COMPANY NAMES WITH A COMMA

SP4a_0. On a scale from 0 to 10 where 0 is not credible at all credible and 10 is extremely credible, please rate each of the following types of companies with respect to how credible you think they are as a source of energy-efficiency related information.

SP4A. ROTATE (A – G)

- SP4A_1.** Engineering / Architectural Design Firms
- SP4A_6.** Energy Equipment Contractors and Installers (e.g., lighting, HVAC)
- SP4A_2.** Energy Service Companies, often referred to as ESCOs
- SP4A_3.** Your electric distribution company [NON-CA SAMPLE]
- SP4A_7.** Companies, besides your electric distribution company, that provide electricity supply
- SP4A_4.** Building operations and maintenance companies
- SP4A_5.** Equipment manufacturers
- SP4A_8.** PG&E
- SP4A_9.** Southern California Edison
- SP4a_10.** San Diego Gas & Electric

SP4b. And if you needed help or information related to energy efficiency, which of the following types of companies we just talked about would you typically call first:

[READ LIST]

[ACCEPT ONLY ONE, ROTATE (A – G), RECORD VERBATIM]

- A. Engineering / Architectural Design Firms 1
- B. Energy Equipment Contractors and Installers (e.g., lighting, HVAC)2
- C. Energy Service Companies, often referred to as ESCOs3
- D. Your electric distribution company4
- E. Companies, besides your electric distribution company, that provide electricity supply5
- F. Building operations and maintenance companies6
- G. Equipment manufacturers7
- H. Other.....8
- I. [DON'T READ] Don't Know9
- J. [DON'T READ] Refused..... 10

SP6a. Do you have a contractor who is responsible for regular O&M of your HVAC system?
[O&M = Operations & Maintenance]

- Yes 1
- No.....2
- Don't know..... 98
- Refused..... 99

IF SP6a=1 ASK SP6b, ELSE SKIP TO SP7a

SP6b. And does this contractor routinely provide energy-savings or efficiency improvement recommendations, or do they generally maintain and service equipment only from an operational perspective?

- Yes, routinely provide efficiency recommendations..... 1
- No, generally maintain and service from operational perspective2
- Don't know..... 98
- Refused..... 99

SP7a. How about for your lighting systems, do you have a contractor who is responsible for regular O&M of your lighting system?

- Yes 1
- No.....2
- Don't know..... 98
- Refused..... 99

IF SP7a=1 ASK SP7b, ELSE SKIP TO SP8a

SP7b. And does this contractor routinely provide energy-savings or efficiency improvement recommendations, or do they generally maintain and service equipment only from an operational perspective?

- Yes, routinely provide efficiency recommendations..... 1
- No, generally maintain and service from operational perspective2
- Don't know..... 98
- Refused..... 99

SP8a. Are there any other major energy-using equipment or systems for which a contractor provides regular O&M services?

- Yes..... 1
- No.....2
- Don't know..... 98
- Refused..... 99

IF SP8a=1 ASK SP8b, ELSE SKIP TO SP9

SP8b. What systems or equipment?
[DO NOT PROMPT. ACCEPT MULTIPLES]

- Industrial Air Compressors..... 1
- Industrial Process System.....2
- Motors.....3
- Refrigeration System.....4
- Other, specify ___**SP8B_OTH**5
- Don't know/refused 98

IF SP8b=98, SKIP TO SP9

SP8c_1. IF SP8b DOES NOT HAVE MULTIPLES ASK: And does this contractor routinely provide energy-savings or efficiency improvement recommendations, or do they generally maintain and service equipment only from an operational perspective?

- Yes, routinely provide efficiency recommendations..... 1
- No, generally maintain and service from operational perspective2
- Don't know/refused..... 98

SP8C_2. IF SP8b HAS MULTIPLES ASK: And, in general, do these contractors routinely provide energy-savings or efficiency improvement recommendations, or do they generally maintain and service equipment only from an operational perspective?

- Yes, routinely provide efficiency recommendations..... 1
- No, generally maintain and service from operational perspective2
- Don't know..... 98
- Refused..... 99

SP9. Are there any new energy-related services your organization would like to have provided that are not being offered to you now?

Yes (specify) - [INTERVIEWER: PROBE FOR THE NEW SERVICES]..... 1

SP9_OPN = Specify New Services

No.....2

Don't know..... 98

Refused..... 99

RECORD VERBATIM

KN0. Now I'd like to ask you a few questions about your knowledge of energy-efficiency opportunities.

KN1. What do you estimate is the maximum percentage by which your facility's total annual electricity consumption could be reduced by implementing all cost-effective energy-efficiency opportunities? [NOTE THAT THIS PERCENTAGE IS OF SAVINGS THAT COULD BE REALIZED BY DOING ALL POSSIBLE COST-EFFECTIVE ENERGY-RELATED PROJECTS BEYOND THOSE PREVIOUSLY IMPLEMENTED.]

KN1_1. Enter Percent..... 1

Don't know..... 98

Refused..... 99

KN2a. On a scale from 0 to 10, where 0 is completely uninformed and 10 is very well informed, how would you rate your organization's knowledge of energy savings opportunities for lighting?

0 1 2 3 4 5 6 7 8 9 10

Don't know..... 98

Refused..... 99

KN2b. And using the same scale, how would you rate your organization's knowledge of energy savings opportunities for HVAC systems?

0 1 2 3 4 5 6 7 8 9 10

Don't know..... 98

Refused..... 99

KN2c. And how about for all of the other major energy-using systems in your facility?

0 1 2 3 4 5 6 7 8 9 10

Don't know..... 98

Refused..... 99

And now I have a few quick questions on possible barriers that your organization faces with respect to implementing cost-effective energy-efficiency opportunities.

BR1. On a scale from 0 to 10, where 0 is completely insignificant and 10 is very significant, how significant are each of the following as obstacles to your organization’s investment in cost-effective energy-efficiency opportunities?

BR1a. Uncertainty over whether actual savings will be equal to or greater than estimated savings
 0 1 2 3 4 5 6 7 8 9 10

Don't know..... 98
 Refused..... 99

BR1b. Amount of time it takes to acquire enough information to make an informed decision to invest in an energy-efficiency project

0 1 2 3 4 5 6 7 8 9 10

Don't know..... 98
 Refused..... 99

BR1c. Again, with 0 being completely insignificant and 10 very significant, how significant is the time and cost associated with selecting contractors and negotiating project terms

0 1 2 3 4 5 6 7 8 9 10

Don't know..... 98
 Refused..... 99

BR1d. Uncertainty over *information provided* by firms proposing efficiency-related projects

0 1 2 3 4 5 6 7 8 9 10

Don't know..... 98
 Refused..... 99

BR1e. Disagreements between decision makers within your organization over the relative importance of energy-efficiency related investments compared with other capital projects

0 1 2 3 4 5 6 7 8 9 10

Don't know..... 98
 Refused..... 99

BR1f. Lack of access to financing for energy-efficiency related projects

0 1 2 3 4 5 6 7 8 9 10

Don't know..... 98
 Refused..... 99

BR1g. Lack of use of formal financial analyses to evaluate energy equipment purchase decisions
 0 1 2 3 4 5 6 7 8 9 10

Don't know..... 98
 Refused..... 99

BR1h. Lack of availability of energy-efficient products and services
 0 1 2 3 4 5 6 7 8 9 10

Don't know..... 98
 Refused..... 99

[ASK FOR STYPE=1 ONLY (CA SAMPLE)]

RS1a. Are you aware that California is changing the way ratepayer funded energy-efficiency services such as audits and rebates are administered?

Yes..... 1
 No..... 2
 Don't know..... 98
 Refused..... 99

IF RS1A=1 ASK RS1b, ELSE SKIP TO RS2

RS1b. Please describe to me the way in which these programs are changing:

Utilities will no longer administer programs 1
 A statewide entity will administer programs 2
 Other, [RECORD VERBATIM] **RS1B_OPN**..... 3
 Don't know..... 98
 Refused..... 99

RS2. Lastly, one of the new programs that is being offered in 1998 is called the Standard Performance Contracting Program. Have you heard of this program?

Yes..... 1
 No..... 2
 Don't know..... 98
 Refused..... 99

THANK YOU FOR YOUR PARTICIPATION IN THIS STUDY.

E.2 END-USER PARTICIPANT SURVEY

**Nonresidential Standard Performance Contract Program - Evaluation and
Baseline Study**

End-User Participant Survey

**Prepared for
CBEE and SCE**

**Prepared by
XENERGY Inc.**

Interviewer _____

Participant Type
[Sponsor Versus Non-Sponsor] _____

NSPC Utility _____

Tracking # from Utility Dbase _____

Survey Number _____

Completion Date/Survey Length _____

CREATE VARIABLE PTYPE, IF PARTICIPANT TYPE=SPONSOR, PTYPE=1, ELSE PTYPE=2

**CREATE VARIABLE SPONSOR WHERE SPONSOR = NAME OF SPONSORING COMPANY
PROVIDED IN DATABASE**

CREATE VARIABLE UTILITY=PG&E, SCE, OR SDG&E FROM DATABASE

END-USER PARTICIPANT INTERVIEW GUIDE – POSSIBLE LEAD IN MATERIAL

Hello, my name is _____ and I am calling on behalf of the California Board for Energy Efficiency (CBEE), which currently has advisory oversight over the Nonresidential Standard Performance Contract program. We are contacting customers that are participating in the Standard Performance Contract program as part of a study reviewing the program. May I please speak with _____? [Confirm this person is responsible for participation decision.]

As I mentioned, we are conducting a study on behalf of the California Board for Energy Efficiency (CBEE). As part of this study, we are contacting firms that are participating in the Standard Performance Contract program to discuss a number of topics about the program and its participants. Your input to this research would be very valuable and we are interested in interviewing you regarding this program. The interview will take between ½ and 1 hour, and any information that is provided will remain strictly confidential. We will not identify or attribute any of your comments or company information. Is this a good time, or can we schedule a convenient time in the next couple of days to talk?

IF HESITANT: Your input to this survey is very important for ensuring the long-term success of these programs. Without input from the participants, we will have difficulty conducting a fair and complete evaluation of the program. I would like to fax or e-mail you a letter from the California Board for Energy Efficiency urging you to participate in this important research.

Thank you for taking part in this survey. The major purposes of this study are to (1) provide feedback to the CBEE on the design and administrative aspects of the program, and (2) understand the characteristics of participants in the program and the types of activity the program has generated. This interview is focused on experiences with the program to date. We will also be selecting a sample of interviewees for a second round and we may wish to talk with you again in a few months to gain additional feedback on your experiences with the detailed program applications (DPAs), Monitoring and Verification, and other aspects of the program that you may not have experienced yet.

RESPONDENT INFORMATION

RI1. First, I'd like to confirm the following information? [CONFIRM CONTACT INFO IN DATABASE, COMPLETE ADDITIONAL INFO AS NECESSARY]

a. NAME	h. PHONE
b. TITLE	i. FAX
c. COMPANY	j. e-MAIL
d. STREET ADDRESS	
e. CITY	k. INTERVIEWER
f. ZIP	l. CALL DATES

[BASED ON DATABASE DETERMINE IF SINGLE OR MULTI-SITE NSPC APPLICATION THEN CONFIRM]

RI2. According to the NSPC program records, your application covers: **FROM DATABASE: A SINGLE SITE / MULTIPLE SITES**

Is this information correct?

Yes, Single site.....	1	SKIP
TO EC1		
Yes, Multiple sites.....	2	ASK
RI3		
No, information appears incorrect [TERMINATE TO INVESTIGATE].....	3	
Don't Know [CONFIRM RIGHT CONTACT, TERMINATE]	98	
Refused [CONFIRM RIGHT CONTACT, TERMINATE,].....	99	

RI3. Great, and according to the program records, your application covers: **NUMBER OF SITES**

Is this information correct?

Yes.....	1
No, information appears incorrect [TERMINATE TO INVESTIGATE].....	3
Don't Know [TERMINATE, CONFIRM RIGHT CONTACT]	98
Refused [TERMINATE, CONFIRM RIGHT CONTACT]	99

IF CUSTOMER IS A NON-SPONSOR ONLY (PTYPE=2) ASK RI4, ELSE SKIP TO EC1

RI4. [NON-SPONSOR ONLY] According to our records, the energy services firm that is the sponsor of the NSPC program application for which your company is a host site is:

SPONSOR NAME FROM DATABASE

Is this information correct?

Yes.....	1
No.....	2
Don't Know [TERMINATE, CONFIRM RIGHT CONTACT]	98
Refused [TERMINATE TO INVESTIGATE]	99

ESTABLISHMENT CHARACTERISTICS

I'd like to ask you a few questions about your organization and the facilities participating in the NSPC.

EC1a. What kind of **facility** is this [TIE TO FACILITY(IES) IN SAMPLE DATABASE]?

DO NOT READ LIST. IF NECESSARY, PROBE CLOSEST CATEGORIES.

IF **SINGLE-SITE PARTICIPANT** (RI2=1) SELECT SINGLE CATEGORY (**ES1a1**).

IF **MULTI-SITE PARTICIPANT** (RI2=2), GET PERCENT BY TYPE ACROSS SITES (**ES1a2**)

	ES1a1 SingleSite	ES1a2 MSite%
Primary or Secondary School.....	1	_____
College or other post-secondary school	2	_____
Office.....	3	_____
Hospital	4	_____
Non-Food Retail.....	5	_____
Restaurant.....	6	_____
Government.....	7	_____
Grocery/Food Sales/Service.....	8	_____
Lodging.....	9	_____
Warehouse.....	10	_____
Religious	11	_____
Industrial Manufacturing.....	12	_____
Industrial Assembly	13	_____
Other (_____).....	14	_____
Don't know.....	98	_____
Refused.....	99	_____
.....		100

EC1b. And what is the primary business of the **company/organization**?

ENTER VERBATIM

EC2. [IF SINGLE-SITE PARTICIPANT (RI2=1) ASK]

Approximately how large is your organization's space in this facility [**or confirm value in tracking dbase**]?

[ELSE IF MULTI-SITE (RI2=2), ASK]

What is the **average size** of your organization's space **among these participating facilities** [**or confirm values in tracking dbase**]?

_____ sq. ft.

CODE 98 FOR DON'T KNOW; 99 FOR REFUSED

EC3. Does your organization.....

Own this space 1 SKIP

TO EC5

Lease this space.....2 GO TO

EC4

Own a portion and lease the remainder3 GO TO

EC4

Don't Know 98 SKIP

TO EC5

Refused..... 99 SKIP
 TO EC5

EC4 For these participating facilities, does your organization pay its own electric bill directly to [PACIFIC GAS & ELECTRIC/ SOUTHERN CALIFORNIA EDISON / SAN DIEGO GAS & ELECTRIC] or is electricity provided under your lease arrangement?
 Pay own electric bill..... 1
 Part of the lease arrangement2
 Some sites pay own bill, other sites part of lease.....3
 [ACCEPT EC4=3 ABOVE ONLY IF RI2=2]

EC5 [IF SINGLE-SITE PARTICIPANT (RI2=1) ASK]
 What is your best estimate of your average monthly electric bill at this facility?

 [ELSE IF MULTI-SITE (RI2=2), ASK]
 What is your best estimate of your **average** monthly electric bill across all participating sites?

 ENTER \$ PER MONTH \$ _____
 Don't know..... 98
 Refused..... 99

EC6. Is this facility...
 Your organization's only location 1
 A franchise location.....2
 A headquarters location of an organization with multiple locations.....3
 A branch location of a larger organization4
 Don't Know 98
 Refused..... 99

EC7 [IF SINGLE-SITE PARTICIPANT (RI2=1) ASK]
 What is the number of full-time equivalent workers of all types employed by your organization at this facility?

 [ELSE IF MULTI-SITE (RI2=2), ASK]
 What is the **average** number of full-time equivalent workers of all types employed by your organization at each facility?

 ENTER NUMBER FTE

OTHER PROGRAM PARTICIPATION AND EFFICIENCY-RELATED IMPROVEMENTS

The next set of questions I'm going to ask have to do with any recent energy-related projects you may have conducted.

IM1. In the past 2 years, besides participation in the SPC program, has your organization at this facility taken part in any other energy efficiency programs offered by your local electric or gas utilities, EPA's Green Lights and Energy Star programs, or the programs of any other organization such as federal, state, or local governments? [DO NOT READ. ACCEPT MULTIPLES]

- Yes - Non-SPC Utility Program outside of CA..... 1a ASK
IM2
- Yes - Non-SPC Utility Programs in CA..... 1b ASK
IM2
- Yes - EPA Green Lights or Energy Star (Federal).....2 GO TO
IM3
- Yes - Other Federal.....3 GO TO
IM3
- Yes - State Government.....4 GO TO
IM3
- Yes - Local Government.....5 GO TO
IM3
- No - None.....6 GO TO
IM3
- Don't Know.....98 GO TO
IM3
- Other specify _____ 99 GO TO
IM3

[SPECIFY SPECIFIC PROGRAMS, IF NECESSARY] _____

IM2 As part of your facility's participation in utility programs, have you received any financial rebates or information-related to efficiency services or both?

- Information only 1
- Rebate only2
- Both.....3
- Don't Know/None98
- Refused _____ 99

IM3 In the past two years, has your organization taken any specific actions to improve its energy efficiency or otherwise reduce energy consumption **besides those actions that you have proposed as part of the NSPC?**

- Yes..... 1
- No2 GO TO
DM1
- Don't Know..... 98 GO TO
DM1
- Refused _____ 99 GO TO
DM1

IM4a Can you describe those energy saving actions for me and in what year they occurred?

- 1 Installed efficient lighting equipment [LIST ACTIONS AND YEAR]

- 2 Installed efficient HVAC or refrigeration equipment [LIST ACTIONS & YEAR]

- 3 Installed efficient motors or variable speed controls [LIST ACTIONS AND YEAR]

- 4 Reengineered manufacturing or process systems to save energy [LIST ACTIONS AND YEAR]

- 5 Installed energy management control system or other controls [LIST ACTIONS AND YEAR]

- 6 Other (Specify)_____

IM4b. And as a percentage of your facility's annual electricity consumption, by how much do you estimate these energy savings actions have or will reduce your annual consumption?

- IM4b_1 _____ Percent
- IM4b_2 Don't Know

ENERGY-RELATED DECISION MAKING

Now I'd like to ask some questions about how your organization generally makes energy-related decisions.

DM1. Which of the following best characterizes who has ultimate authority in your organization with respect to energy-related projects? Would you say that it is:

[IF EC6=1, SINGLE SITE, THEN READ ONLY ITEMS 1 and 3, ELSE READ 1 THROUGH 5]

- One individual at this facility 1
- One individual at parent organization.....2
- A group of individuals at this facility3
- A group of individuals at parent organization.....4
- A group of individuals at both this facility and the parent organization5
- Don't Know 98
- Refused..... 99

DM6. And has your organization assigned responsibility for controlling energy usage and costs to a specific staff person, such as an energy manager, group of staff, or outside contractor?

- Yes, in-house staff person 1
- Yes, group of staff.....2
- Yes, outside contractor3
- No.....4
- Don't Know.....5

DM8. Does your organization maintain a separate annual budget for energy-efficiency related improvements, or must money for such investments come out of other budgets?

- Have annual budget for EE..... 1
- Money must come from other budgets.....2
- Don't Know.....3

DM9. Has your organization developed a policy for the selection of energy-efficient equipment?

- Yes..... 1
- No.....2 SKIP
- TO DM11
- Don't Know.....3 SKIP
- TO DM11

DM10. Does this policy or specification require the use of the following kinds of equipment? READ LIST, CODE 1 = YES, 2 = NO, 3 = DON'T KNOW

- a. Electronic ballasts or T8 Lamps ____
- b. Lighting controls..... ____
- c. High-efficiency packaged air conditioners or chillers ____
- d. High efficiency motors..... ____
- e. Variable speed motor controls, where appropriate..... ____
- f. Energy management control systems ____
- g. Other, please specify_____

DM11. Does your organization apply long-term investment analysis to energy equipment selection such as estimates of payback periods, life cycle costs or internal rate of return?

- Yes..... 1
- No.....2 SKIP
- TO DM13
- Don't Know..... 98 SKIP
- TO DM13

DM12. What is the investment criterion you use? [ACCEPT ONLY ONE. PROMPT IF NECESSARY, RECORD PROMPT REQUIRED]

- Payback period..... 1 ASK
- DM12a
- Internal rate of return.....2 ASK
- DM12b
- Life-cycle cost analysis3 ASK
- DM12c
- Other, please specify_____ 99GO TO DM13

DM12a. How many years or less must the project payback be? _____ Years

SKIP TO SP1

DM12b. And what is the minimum percent rate of return required for energy-efficiency related projects?
_____ Percent

SKIP TO SP1

DM12c. And what factors are typically included in your organization's life-cycle cost analysis?

RECORD FACTORS VERBATIM

SKIP TO SP1

DM13. What factors does your organization use to make energy equipment selections?

RECORD FACTORS VERBATIM

AWARENESS AND ASSESSMENT OF SPECIFIC SERVICE PROVIDERS AND PROVIDER TYPES

Now I'd like to ask you a few questions about different types of energy services providers.

SP1. Can you tell me the names of any companies that specialize in providing energy-efficiency services?

RECORD ALL RESPONSES VERBATIM

SP2. And do you know the names of any firms that provide Energy Performance Contracting?

RECORD ALL RESPONSES VERBATIM

SP3. And what about electricity itself, can you tell me the names of any companies that competitively sell electricity besides your local electric distribution company?

RECORD ALL RESPONSES VERBATIM

SP4a. On a scale from 0 to 10 where 0 is not credible at all and 10 is extremely credible, please rate each of the following types of companies with respect to how credible you think they are as a source of energy-efficiency related information, including specific savings recommendations, and estimates of how much energy efficiency measures will cost and save?

ROTATE (A – G)

- A. Energy Equipment Contractors and Installers (e.g., lighting, HVAC)
- B. Engineering / Architectural Design Firms
- C. Energy Service Companies, often referred to as ESCOs
- D. Your electric distribution company [FOR CA SAMPLE USE LOCAL UTILITY]
PG&E/SDG&E/SCE,
- E. Companies, besides your electric distribution company, that provide electricity supply
- F. Building operations and maintenance companies
- G. Equipment manufacturers

SP4b. And if you needed help or information related to energy efficiency, which of the following types of companies would you typically call first:

ACCEPT ONLY ONE, ROTATE (A – G)

- A. Energy Equipment Contractors and Installers (e.g., lighting, HVAC)
- B. Engineering / Architectural Design Firms
- C. Energy Service Companies, often referred to as ESCOs
- D. Your electric distribution company [FOR CA SAMPLE USE LOCAL UTILITY]
PG&E/SDG&E/SCE,
- E. Companies, besides your electric distribution company, that provide electricity supply
- F. Building operations and maintenance companies
- G. Equipment manufacturers

NSPC PARTICIPATION - ID DECISION MAKERS

Now I'd like to ask some questions about the measures you submitted as part of your NSPC application.

PA1. First, I'd like to confirm how far along would you are in the NSPC application process. Have you:

Submitted BPA only.....1

Submitted DPA, but still in process of obtaining approval2

Submitted DPA and obtained approval3

[GET STATUS FROM UTILITY TRACKING DATABASES]

PA2. Besides yourself, who else at your company was involved in authorizing the decision to enter the SPC program, and what were their roles in the decision making process?

Name: _____	Name: _____
Role: _____	Role: _____
Phone: _____	Phone: _____

PA3. And who was primarily responsible for the specification of the installed equipment?

Equipment type: _____	Equipment type: _____
Name: _____	Name: _____
Phone: _____	Phone: _____

Equipment type: _____ Equipment type: _____

Name: _____ Name: _____

Phone: _____ Phone: _____

[CONFIRM/CHECK AGAINST DATA BASE RECORDS]

NSPC PARTICIPATION - ID/CONFIRM MEASURES

(Discuss with interviewee the measures you are going to ask questions about. Determine which measures they are familiar with and whether they or someone else is the more appropriate person to answer the questions. If necessary, conduct additional interviews with others to accurately answer the questions on the following pages.)

Interviewee Name (if different from interviewee on pg. 1):

Measures covered by this section.

Use additional sections as necessary for different interviewees or for breakout of answers by measure types.

List Measures by type, Describe as Necessary. Or attach and reference sheet with measures currently tracked in program database. If measures from databases are unavailable, have respondent list all measure types in application
1.
2.
3.

Section # _____ of # _____ sections for this NSPC Survey Number.

[Remind the interviewee that the following questions pertain to the particular energy efficiency measures that are to be installed as part of the NSPC Program and are identified in the above tables. Use multiple forms if answers appear to vary significantly by measure type.]

PROGRAM-RELATED DECISION MAKING SECTION

[Again, make sure interviewee is aware that you are talking about specific technologies that will be installed through the NSPC program and referred to in the measure identification section above.]

SPONSORS AND NONSPONSORS

PD1 Which of the following statements best describes the situation that led you to propose the installation of ***Program-Related Equipment?***

- Needed to replace older equipment..... 1
- Needed to add equipment because of a remodel, build-out, or expansion.....2
- Wanted to reduce our energy costs.....3
- Wanted more control over how the equipment was used.4
- Don't Know/Refused.....5
- Other _____ PD1a. Describe _____ 6

PD 2 How did you first hear about the ***Energy Efficiency Equipment*** that was installed as part of the Program?

[ACCEPT ONLY ONE RESPONSE]

- 1 Contractor
- 2 Architect / Engineer
- 3 Vendor
- 4a *PG&E representative or program literature (confirm, regulated distribution company)*
- 4b *SCE representative or program literature (confirm, regulated distribution company)*
- 4c *SDG&E representative or program literature (confirm, regulated distribution company)*
- 5 Other non-utility literature, including trade publications
- 6 Friend / Business colleague / Professional association
- 7 Previous installation
- 8 Energy Services Company, often referred to as ESCOs
- 9 An unregulated company that provides electricity supply
- 10 OTHER [SPECIFY, OK TO PUT NAME OF COMPANY]

- 11 DON'T KNOW / REFUSED

PD3 How did you first learn of the NSPC Program?

[SELECT SINGLE BEST RESPONSE]

Specify name of company/source: _____

CIRCLE CLOSEST CATEGORY

- 1 Contractor
- 2 Architect / Engineer
- 3 Equipment Vendor
- 4a *PG&E representative or program literature (confirm, regulated distribution company)*
- 4b *SCE representative or program literature (confirm, regulated distribution company)*
- 4c *SDG&E representative or program literature (confirm, regulated distribution company)*
- 5 Friend / Business colleague / Professional association
- 6 NSPC Workshop
- 7 NSPC Website
- 8 Other NSPC marketing materials / advertising
- 9 Energy Services Company, often referred to as ESCOs
- 10 An unregulated company that provides electricity supply
- 11 OTHER [SPECIFY]

- 12 DON'T KNOW / REFUSED

PD 4a When did you first learn about the NSPC Program? Was it **BEFORE** or was it **AFTER** you first began to think about installing *Energy Efficient Equipment*?

- 1 BEFORE
- 2 AFTER
- 9 DON'T KNOW / REFUSED

PD 4a1. And in approximately what month and year did you first begin to think about installing *Energy Efficient Equipment*?

Month: _____ Year: _____

PD 4b Did you learn about the NSPC Program **BEFORE** or **AFTER** you decided to install the *specific Energy Efficient Equipment* that you plan to install?

- 1 BEFORE
- 2 AFTER
- 9 DON'T KNOW / REFUSED

PD 4b1. And in approximately what month and year did you first decide to install **Energy Efficient Equipment?**

Month: _____ Year: _____

PD4c Which of the following best describes the process by which you decided to install the **Energy Efficiency Equipment?**

- 1 Developed the idea ourselves and decided solely on our own to pursue installation TO PD5 SKIP
- 2 Developed the idea ourselves but were convinced by a third-party to pursue installation [ASK PD4d]
- 3 Received the idea from a third-party and were also convinced by this party to pursue installation [ASK PD4d]
- 5 Other →PD4c1. Describe _____ [ASK PD4d]
- 9 DON'T KNOW / REFUSED [ASK PD4d]

PD4d And what was the name of this company?

NONSPONSORS ONLY

PD5. [NON-SPONSOR - IF PTYPE=2 ASK PD5, ELSE SKIP TO PD10]

As part of your participation in the NSPC program, the Energy Efficiency Service Provider that is the sponsor of the program application for your organization will receive an incentive from **UTILITY** payable over two years that is based on the level of energy savings demonstrated to result from your project.

PD5a. Prior to this call, were you aware that incentives will be received by your sponsoring EESP, **SPONSOR**, from the NSPC program for this project?

- Yes..... 1
 - No.....2 SKIP
- TO PC1

PD5b. Which of the follow statements best describes the arrangement you have with **SPONSOR** with respect to allocation of the incentives from the NSPC program? [READ LIST AND SELECT ONLY ONE]

- Program incentives will be applied directly to reducing the costs of purchasing and installing the efficient equipment?..... 1
- Program incentives will be used by your organization as you choose2
- Program incentives will be used by your NSPC Project Sponsor as they choose3
- Program incentives will be split on a percentage basis between your organization and your NSPC Project Sponsor?..... 4
- Don't know..... 98
- Refused..... 99

PD 6 On a scale from 0 to 10, where 0 is completely insignificant and 10 is extremely significant, please rate the significance of each of the following with respect to how important they were in your decision to install the **Energy Efficient Equipment?** Let me read you all of the factors first and then we'll go over your rating of each of them...

PD6a. The NSPC program incentives to be paid to **SPONSOR** based on the actual savings demonstrated?

0 1 2 3 4 5 6 7 8 9 10

11 Don't Know

12 Refused

PD6b. The overall value of the services provided by **SPONSOR**?

0 1 2 3 4 5 6 7 8 9 10

11 Don't Know

12 Refused

PD6c. Information provided by **SPONSOR** that identified and explained the energy efficiency opportunities included in the NSPC application?

0 1 2 3 4 5 6 7 8 9 10

11 Don't Know

12 Refused

PD6d. Services provided by **SPONSOR** to carry out the measurement and verification activities necessary to demonstrate the savings from the energy-efficiency projects?

0 1 2 3 4 5 6 7 8 9 10

11 Don't Know

12 Refused

PD7a. Without the NSPC program, including both the incentive **and** the services provided by **SPONSOR**, how likely is it you would have installed the Energy Efficient Equipment? Would you say it was ...

- 1 Definitely would NOT have installed SKIP TO PD 9a
- 2 Probably would NOT have installed SKIP TO PD 9a
- 3 Probably would have installed
- 4 Definitely would have installed
- 9 DON'T KNOW / REFUSED

PD7b. **[IN-DEPTH ONLY]** Please describe the specific ways in which **SPONSOR** contributed, if at all, to your decision to install the **Energy Efficient Equipment?**

[IF PD7a = 1 OR 2, SKIP TO PD9a, ELSE ASK PD8]

PD 8 Without the NSPC program, including both the incentive **and** services provided by **SPONSOR**, how likely is it that the equipment you purchased would have been *as energy efficient* as the equipment you installed with the incentive? Would you say . . .

- 1 Probably NOT as efficient
- 2 Probably as efficient
- 9 DON'T KNOW / REFUSED

SKIP TO PD 9b

PD 9a Without the NSPC program, including both the incentive **and** services provided by **SPONSOR**, what type of equipment would you have most likely installed? Would you say. . .

- 1 Standard efficiency equipment
- 2 Equipment with above-standard efficiency but with lower efficiency than the equipment that was actually installed
- 3 Would not have installed anything
- 9 DON'T KNOW / REFUSED

PD 9b And then without the NSPC program, including both the incentive **and** services provided by **SPONSOR**, would you have installed the **Energy Efficient Equipment** at about the same time as currently planned or at a later date?

[IF AT A LATER DATE, PROBE: "Would that be less than 1 year later, or over 1 year later?", AND SELECT APPROPRIATE RESPONSE. If over 1 year later, probe for best estimate of how many years later.]

- 1 Same Time To Less Than 1 Year
- 2 Over 1 Year Later PD9c. Approximately how many years later? _____
- 9 DON'T KNOW / REFUSED

SKIP TO PD15

SPONSORS ONLY

PD 10 How significant was the NSPC program incentive in influencing your decision to install the **Energy Efficient Equipment**? Would you say . . .

- 1 Insignificant
- 2 Somewhat Significant
- 3 Very Significant
- 4 Extremely Significant
- 9 DON'T KNOW / REFUSED

PD 11 If the NSPC incentive had not been available, how likely is it you would have installed the **Energy Efficient Equipment**? Would you say . . .

- | | |
|---------------------------------------|--------------|
| 1 Definitely would NOT have installed | SKIP TO PD13 |
| 2 Probably would NOT have installed | SKIP TO PD13 |
| 3 Probably would have installed | ASK PD12 |
| 4 Definitely would have installed | ASK PD12 |
| 9 DON'T KNOW / REFUSED | ASK PD12 |

PD 12 Without the NSPC incentive, how likely is it that the equipment you purchased would have been as energy efficient as the equipment you installed with the incentive? Would you say . . .

- 1 Probably NOT as efficient
- 2 Probably as efficient
- 9 DON'T KNOW / REFUSED

SKIP TO PD14

PD 13 Without the NSPC incentive, what type of equipment would you have most likely installed? Would you say...

- 1 Standard efficiency equipment
- 2 Equipment with above-standard efficiency but with lower efficiency than the equipment that was actually installed
- 3 Would not have installed anything
- 9 DON'T KNOW / REFUSED

PD 14 And if the NSPC incentive had not been available, would you have installed the **Energy Efficient Equipment** at about the same time as currently planned or at a later date?

[IF AT A LATER DATE, PROBE: "Would that be less than 1 year later, or over 1 year later?", AND SELECT APPROPRIATE RESPONSE. If over 1 year later, probe for best estimate of how many years later.]

- 1 Same Time To Less Than 1 Year
- 2 Over 1 Year Later ➔PD14a. Approximately how many years later? _____
- 9 DON'T KNOW / REFUSED

SPONSORS AND NONSPONSORS

PD15. Now I want to review the NSPC's incentive levels by end use. The program incentives are

End Use	Incentive
Lighting	\$0.075 per kWh saved
HVAC&R	\$0.21 per kWh saved
Other	\$0.11 per kWh saved

How significant were the differences in end-use incentives offered by the program in effecting your final choice of which energy saving actions to install? Would you say . . .

- 1 Insignificant
- 2 Somewhat Significant
- 3 Very Significant
- 4 Extremely Significant
- 5 Not familiar with end-use incentive aspect of NSPC program
- 9 DON'T KNOW / REFUSED

PD16. Now I want to ask about whether any other utility programs, not including the NSPC, influenced your decision to install the energy-efficient equipment we have been discussing. Were there any other utility programs prior to the NSPC that influenced your decision to install the **Energy Efficient Equipment**?

- 1 Yes, specify program: _____ ASK PD17
- 2 No SKIP TO PD18a
- 3 Don't Know/Refused SKIP TO PD18a

PD17. And how significant a role did this program play in influencing your decision to install the **Energy Efficient Equipment**? Would you say . . .

- 1 Insignificant
- 2 Somewhat Significant
- 3 Very Significant
- 4 Extremely Significant
- 9 DON'T KNOW / REFUSED

[IF EC6 NE 1(MORE THAN ONE LOCATION) ASK PD18, ELSE SKIP TO PC1]

PD18a. [FOR FACILITIES WITH MULTIPLE LOCATIONS] Are you undertaking the **Energy Efficient Equipment** at just one location or is this being implemented in multiple locations of a chain, for instance? **[IF AVAILABLE, PHRASE AS A CONFIRMATION ACCORDING TO DBASE RECORDS OR BPA/DPA HARDCOPY]**

1. One location SKIP TO PC1
2. Multiple locations _____ # → continue

PD18b. And are NSPC program funds being used at all of these multiple locations or just a subset of locations?

1. All Locations (SKIP TO PC1)
2. Subset of locations

PD15b1. SPECIFY % OF LOCATIONS USING NSPC FUNDS _____

PD18c. And do you plan to implement any of the efficiency projects you have included in your NSPC application at other facilities of your organization based on your experience with these projects as part of this program?

1. Yes
2. No

[For In-depth, probe for explanation]

FAMILIARITY WITH AND USE OF PERFORMANCE CONTRACTING

Now I'd like to ask some questions about any experience your organization may have with a particular type of energy efficiency related contract.

- PC1. **Prior to your participation in the NSPC**, had you heard of the term Energy Performance Contracting?
- | | | |
|-----------------|----|------|
| Yes..... | 1 | ASK |
| PC2 | | |
| No..... | 2 | SKIP |
| TO PC3 | | |
| Don't Know..... | 98 | SKIP |
| TO PC3 | | |

- PC2. What would you say are the defining characteristics of an Energy Performance Contract? [DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM RECORDING.]
- | | | |
|---|---|--|
| Vendor is paid on a shared savings basis..... | 1 | |
| Payment is tied to actual energy savings that are measured over a multiyear period..... | 2 | |
| Don't Know..... | 3 | |

Verbatim: _____

- PC3. For the purposes of this survey, we are defining Energy Performance Contracting as follows: a retrofit or new construction project in which energy savings are measured and verified (based on assumptions regarding the level of operations and the cost of energy being saved) and the company performing the work is paid only from total dollar savings actually produced by the project.

Prior to your participation in the NSPC, had your organization been approached by any companies offering an Energy Performance Contract?

- | | | |
|-----------------|---|------|
| Yes..... | 1 | ASK |
| PC4 | | |
| No..... | 2 | SKIP |
| TO PE1 | | |
| Don't Know..... | 3 | SKIP |
| TO PE1 | | |

PC4a. How many Energy Performance Contract offers did you receive over the past two years? _____
 # of Offers

- PC4b. Which of the following statements best describes how far you went in the decision making or project development process ? [READ LIST]
- | | | |
|---|----|------|
| Heard presentation but did not request proposal(s)..... | 1 | ASK |
| PC5 | | |
| Asked for and received formal proposal(s) but did not enter contract negotiations.... | 2 | ASK |
| PC5 | | |
| Tried to negotiate contract but failed to come to agreement..... | 3 | ASK |
| PC5 | | |
| Negotiated and signed contract | 4 | SKIP |
| TO PC6a | | |
| Don't know..... | 98 | ASK |
| PC5 | | |
| Refused..... | 99 | ASK |
| PC5 | | |

PC5. What were the main reasons you did not enter into an Energy Performance Contract?

SKIP TO PE1a

PC6a. And in what year did you enter into this(these) Energy Performance Contract(s)?
 1st Contract - ____Year
 2nd Contract - ____Year

PC6b. What are the main reasons that you chose an Energy Performance Contract over other forms of project development? [IF MORE THAN ONE ENERGY PERFORMANCE CONTRACT, FOCUS ON THE LARGEST ONE]

RECORD REASONS VERBATIM

PC6c. And what firm did you select for the Energy Performance Contract?

RECORD NAME OF FIRM VERBATIM

- PC6d. Overall, how satisfied are you with the outcome of this Energy Performance Contract?
- | | |
|-----------------------------|----|
| Very Satisfied | 1 |
| Somewhat Satisfied | 2 |
| Somewhat dissatisfied | 3 |
| Very dissatisfied | 4 |
| Don't know/no answer..... | 98 |

PROGRAM-SPONSORS EXPERIENCE WITH 3RD-PARTY FIRMS

Now I want to switch back to a few more questions about your participation in the NSPC.

IF PARTICIPANT IS A SPONSOR (PTYPE=1) ASK PE SERIES, ELSE IF PTYPE=2 SKIP TO NS1a

PE1a. What are the reasons that you decided to participate in the NSPC program? Can you say which was the most important reason?

[DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM RECORDING.]

PE1b-c. Are there other reasons?

	PE1a	PE1b	PE1c
Use program incentives to install Energy Efficient Equipment that would otherwise not be installed?	1	1	1
Use program incentives to improve cost-effectiveness of Energy Efficient Equipment that was already planned to be installed?	2	2	2
Take advantage of incentives now due to uncertainty over future funding, i.e, accelerate installation of Energy Efficient Equipment that might have otherwise been deferred?	3	3	3
Try out new business relationship with energy services firm	4	4	4
Other (Specify)	5	5	5
No other reasons	6	6	6
Don't know	98	98	98
Refused	99	99	99

PE1d. Other _____

PE2a. How many companies are you working with, or do you plan to work with, as part of your NSPC application?

- Currently working with 1 or more firms 1 ASK
PE2b
- Plan to work with 1 or more firms 2 ASK
PE2b
- Plan to do entire project alone 3 SKIP
TO PE3a
- Don't Know 98 SKIP
TO PE3a

Refused.....99 SKIP
TO PE3a

PE2b. Could you please specify the Name of the firm(s)

Firm
1 _____

Firm
2 _____

PE2c. And how would you describe the main line of business of the firm(s)?

Firm
1 _____

Firm
2 _____

IF PE2a INDICATES WORKING WITH MORE THAN ONE FIRM, ASK PE2d, ELSE SKIP TO PE2e.

PE2d. Is one of these firms acting as a prime contractor, if so, which one?

Prime Contractor _____ [GET TYPE OF FIRM
IF NAME REFUSED]

PE2f. And did you get multiple bids for the project?

- Yes 1
- PE2f1. How many? _____
- No 2
- Don't Know..... 98
- Refused..... 99

PE2g How significant a role did the company(ies) you just mentioned play in your decision to install the **Energy Efficient Equipment?** Would you say . . .

- 1 Insignificant
- 2 Somewhat Significant
- 3 Very Significant
- 4 Extremely Significant
- 9 DON'T KNOW / REFUSED

PE2h. Please describe the ways in which the company(ies) you just mentioned contributed, it at all, to your decision to install the **Energy Efficient Equipment**?

PE2i. And using the definition of Energy Performance Contracting that I provided earlier and contrasting that with a fixed fee-for-service or equipment-type contract, what kind of contractual arrangement has been established with the firm(s) that are/may be assisting you?

PE2i1. Firm 1 (FROM PE2c)

Energy performance contract.....	1
Fee-for-service/equipment contract	2
Other	3
PE2i1a(please describe)_____	
Don't Know.....	98
Refused.....	99

PE2i2. Firm 2 (FROM PE2c)

Energy performance contract.....	1
Fee-for-service/equipment contract	2
Other	3
PE2i2a(please describe)_____	
Don't Know.....	98
Refused.....	99

PE2j. Are there any other energy-related services that you are receiving from the company(ies) besides those that are included in your NSPC application?

SPECIFY VERBATIM

PE2k. And were any of these products or services new to you?

Yes	1
No	2
Don't Know.....	98
Refused.....	99

PE2I. And do you plan to use any of the companies you mentioned for other energy-efficiency projects in the future?

PE3a. And are you planning to use your in-house staff or an outside firm to implement the M&V requirements?

1. In-house ASK PE3c
2. Outside firm, → PE3b Request name: _____ SKIP TO PE4

PE3c And, in general, how are your NSPC-related activities being staffed in-house? [PROBE FOR WHAT TYPE OF STAFF WILL INTERPRET AND IMPLEMENT DPA PROCEDURES AND M&V REQUIREMENTS]

PE4. Finally, many of the companies participating in the NSPC chose to work with third-party energy services firms that acted as the project sponsor on their applications. Why did you choose to submit your application(s) as your own project sponsor? [ENTER RESPONSES VERBATIM]

SKIP TO P1

PROGRAM NON-SPONSORS EXPERIENCE WITH 3RD PARTY FIRMS

Now I want to switch back to a few more questions about your participation in the NSPC.

IF PARTICIPANT IS A NON-SPONSOR (PTYPE=2) ASK NS SERIES, ELSE PE SERIES SHOULD HAVE OCCURRED

NS1a. What are the reasons that you decided to participate in the NSPC program? Can you say which was the most important reason?

[DO NOT READ. ACCEPT MULTIPLES. ALLOW VERBATIM RECORDING.]

NS1b-c. Are there other reasons

	NS1a	NS1b	NS1c
Use program incentives to install Energy Efficient Equipment that would otherwise not be installed?	1	1	1
Use program incentives to improve cost-effectiveness of Energy Efficient Equipment that was already planned to be installed?	2	2	2
Take advantage of incentives now due to uncertainty over future funding, i.e, accelerate installation of Energy Efficient Equipment that might have otherwise been deferred?	3	3	3
Try out business relationship with energy services firm	4	4	4
Other (Specify)	5	5	5
No other reasons	6	6	6
Don't know	98	98	98
Refused	99	99	99

NS1d. Other _____

NS2a. Are there any other companies you are working with, or that you plan to work with, as part of your participation in the NSPC program **besides the company that I confirmed was your NSPC application sponsor** at the beginning of this interview?

- Yes..... 1 ASK
- NS2b
- No.....2 SKIP
- TO NS2f
- Don't Know..... 98 SKIP
- TO NS2f
- Refused..... 99 SKIP
- TO NS2f

NS2b. Specify Name of firm(s)

Firm 1 _____ Firm 2 _____

NS2c. And how would you describe these companies in terms of their main line of business?

Firm _____

Firm _____

NS2d. Which of these firms, including your NSPC application sponsor, is acting as prime contractor for this work, if any?

NSPC Sponsor	1
Other Firm.....	2
Don't know.....	98
Refused.....	99
NS2f. And did you get multiple bids for the project?	
Yes	1
→ NS2f1. How many? _____	
No	2
Don't Know.....	98
Refused.....	99
NS2i. And using the definition of Energy Performance Contracting that I provided earlier and contrasting that with a fixed fee-for-service or equipment-type contract, what kind of contractual arrangement has been established with SPONSOR ?	
Energy performance contract.....	1
Fee-for-service/equipment contract	2
Other	3
NS2i1a (please describe) _____	
Don't Know.....	98
Refused.....	99
NS2j. Are there any other energy-related products or services that you are receiving from the company(ies) besides those that are included in your NSPC application?	
SPECIFY VERBATIM	
NS2k. And were any of these products or services new to you?	
Yes	1
No	2
Don't Know.....	98
Refused.....	99
NS2l. And do you plan to use any of the companies you mentioned for other energy-efficiency projects in the future?	
NS3a. Some of the companies participating in the NSPC chose to submit their own applications to the NSPC program without using a third-party firm. Why did your firm choose to submit your	

application(s) with a third-party firm? [ENTER RESPONSES VERBATIM]?

NS3b. And why did you select **SPONSOR**?

NS3C. And how satisfied are you with **SPONSOR**'s performance in assisting you with this NSPC project so far?

NSPC PROCESS-RELATED EXPERIENCE

P.1 Based upon your experiences, what do you view as the primary strengths of the SPC program?

P.2 Based upon your experiences, what do you view as the primary weaknesses of the SPC program?

P.4 Are the forms reasonable, and the documentation clear?

0. NO

1. Yes

Please Explain: _____

P.5 Are the standard prices appropriate?

P.6 What are the pros and cons of end-use pricing (prompt to contrast one price and measure-specific pricing)?

P.7 What would be the impact upon your current projects if the price had been:

P7a. 25% lower? _____

P7b. 25% higher? _____

P.9 Are the BPA requirements reasonable?

0. NO

1. Yes

Please Explain: _____

P.10 Are the DPA requirements reasonable?

0. NO

1. Yes

Please Explain: _____

P.11 Are the periods of time allowed between BPA and DPA submittal appropriate?

0. NO

1. Yes

Please Explain: _____

P.12 Are payment procedures and timing reasonable?

- 0. NO
- 1. Yes

Please Explain: _____

P.19 Do you have any thoughts on how the program design could be changed to increase the participation of other customers, especially smaller ones?

P.22a How, if at all, have the M&V requirements influenced the mix of measures proposed?

P.22b Are the M&V requirements clear?

- 0. NO
- 1. Yes

Please Explain: _____

P.22c Are the M&V requirements reasonable?

- 0. NO
- 1. Yes

Please Explain: _____

P.24 How easy or difficult do you think it will be to meet the M&V requirements

P.25 Have the utility(ies) or their representatives been helpful during the various aspects of the NSPC program process?

- 0. NO
- 1. Yes

Please Explain: _____

AWARENESS AND KNOWLEDGE OF ENERGY-EFFICIENCY OPPORTUNITIES

Now I'd like to ask you a few questions about your knowledge of energy-efficiency opportunities.

KN1. What do you estimate is the maximum percentage by which your facility's total annual electricity consumption could be reduced by implementing all cost-effective energy-efficiency opportunities? [NOTE THAT THIS PERCENTAGE IS OF SAVINGS THAT COULD BE REALIZED BY DOING ALL POSSIBLE COST-EFFECTIVE ENERGY-RELATED PROJECTS BEYOND THOSE IMPLEMENTED PRIOR TO PARTICIPATION IN THE NSPC PROGRAM.]

- KN1a _____ Percent
- KN1b Don't Know

KN2a. On a scale from 0 to 10, where 0 is completely uninformed and 10 is very well informed, how would you rate your organization’s knowledge of energy savings opportunities for lighting?

0 1 2 3 4 5 6 7 8 9 10
 11 Don't Know
 12 Refused

KN2b. And using the same scale, how would you rate your organization’s knowledge of energy savings opportunities for HVAC systems?

0 1 2 3 4 5 6 7 8 9 10
 11 Don't Know
 12 Refused

KN2c. And how about for all of the other major energy-using systems in your facility?

0 1 2 3 4 5 6 7 8 9 10
 11 Don't Know
 12 Refused

ENERGY-EFFICIENCY BARRIERS

And a few quick questions on possible barriers that your organization faces with respect to implementing cost-effective energy-efficiency opportunities.

BR1. On a scale from 0 to 10, where 0 is completely insignificant and 10 is very significant, how significant are each of the following as obstacles to your organization’s investment in cost-effective energy-efficiency opportunities?

BR1a. Uncertainty over whether actual savings will be equal to or greater than estimated savings
 0 1 2 3 4 5 6 7 8 9 10
 11 Don't Know
 12 Refused

BR1c. The time and cost associated with selecting contractors and negotiating project terms
 0 1 2 3 4 5 6 7 8 9 10
 11 Don't Know
 12 Refused

BR1d. Uncertainty over *information provided* by firms proposing efficiency-related projects
 0 1 2 3 4 5 6 7 8 9 10
 11 Don't Know
 12 Refused

BR1e. Disagreements between decision makers within your organization over the relative importance of energy-efficiency related investments compared with other capital projects

0 1 2 3 4 5 6 7 8 9 10

11 Don't Know

12 Refused

BR1f. Lack of access to financing for energy-efficiency related projects

0 1 2 3 4 5 6 7 8 9 10

11 Don't Know

12 Refused

ELECTRIC SUPPLY CHOICES

And finally, I have just a few questions regarding your choice of electric service provider.

ES1. Prior to this interview were you aware that you could choose a new supplier of electricity in most of California?

Yes..... 1

No..... 2

Don't know..... 98

Refused..... 99

ES2. On a scale from 0 to 10, where 0 is completely uninformed and 10 is very well informed, how would you rate your personal knowledge of electric industry restructuring?

0 1 2 3 4 5 6 7 8 9 10

11 Don't Know

12 Refused

ES4 The electric industry in California has been restructured so that you are now able to purchase power from suppliers other than your utility.

ES4a. Have you received any offers to purchase electricity from any suppliers other than your local utility?

Yes..... 1 ASK

ES4b

No..... 2 SKIP

TO ES4c

Don't know..... 98 SKIP

TO ES4c

Refused..... 99 SKIP

TO ES4c

ES4b. Approximately how many offers have you received? _____ # of Offers

ES4c. Which of the following best describes the activities your company has pursued with respect to deregulation? Would you say it...

- ES5a Has selected an electricity supplier for one or many sites..... 1 ASK
- ES5a Is actively shopping for a new electricity supplier2 SKIP
- TO ES6 Is waiting to see how the market unfolds.....3 SKIP
- TO ES6 Does not intend to switch electricity suppliers.....4 SKIP
- TO ES7 Has not really evaluated the situation yet5 SKIP
- TO ES7 Don't know..... 98 SKIP
- TO ES7 Refused..... 99 SKIP
- TO ES7

ES5a [CONFIRM] Did you select a new supplier or did you elect to remain with your electric distribution utility or its unregulated affiliate?

- 1 selected a new supplier
- 2 selected their utility/affiliate

ES5b What is the name of your new supplier? _____ SKIP
TO ES11

NON-CHOOSERS

ES6. Which statement best fits your stage in the decision making process [READ LIST, ROTATE START]?

- Are currently investigating or considering offers 1
- Plan to seriously investigate offers soon2
- Plan to stay with [UTILITY] for the foreseeable future3
- Are waiting for the market to start operating before we do anything else..... 4
- Don't Know..... 98
- Refused..... 99

ES7. What are the most important reasons your organization has not signed-up with a new electricity supplier ? (RECORD UP TO 3 REASONS VERBATIM)

ES8. Did you receive any offers for electricity that included energy-efficiency products and services for your organization as part of the package?

- Yes..... 1
- No.....2
- Don't know..... 98
- Refused..... 99

ES9a. How important would you say that it is that offers from electricity suppliers include energy efficiency services? Would you say that it is:

- 1 Very Important
- 2 Somewhat Important
- 3 Somewhat unimportant
- 4 Very unimportant
- 8 Don't know/No Answer

IF ES9a=1,2,3, or 4, ASK ES9b, ELSE ASK ES14

ES9b. And why is that? RECORD VERBATIM

SKIP to ES 14

CHOOSERS

ES11. Did you choose your electric supplier solely on the basis of price or did you consider some other factors along with price in making your decision?

- Price only 1 SKIP
- Considered other factors in addition to price2 ASK
- Don't know..... 98 ASK
- Refused..... 99 ASK

ES12. What were the most important factors in your decision to select your new supplier?

RECORD ALL REASONS VERBATIM

IF ENERGY EFFICIENCY MENTIONED SKIP TO ES13B, ELSE ASK ES13a

ES13a. Did you receive any offers for electricity that included energy-efficiency products and services for your organization as part of the package?

- Yes..... 1 ASK

ES13b

- No.....2 SKIP:

ES13c

- Don't know..... 98 SKIP:
- Refused..... 99 SKIP:

ES13b. And did the offer you accepted include energy-efficiency products and services for your organization as part of the package?

- Yes..... 1
- No.....2
- Don't know..... 98
- Refused..... 99

ES13c. How important would you say that it is that offers from electricity suppliers include energy efficiency services? Would you say that it is:

- 1 Very Important
- 2 Somewhat Important
- 3 Somewhat unimportant
- 4 Very unimportant
- 8 Don't know/No Answer

ES14. And over the next 3 years, do you expect the price you pay for electricity will:

- Increase significantly..... 1
- Increase slightly2
- Decrease significantly3
- Decrease slightly.....4
- Stay about the same.....5
- Don't know..... 98
- Refused..... 99

THANK YOU FOR YOUR PARTICIPATION IN THIS STUDY.

E.3 PARTICIPANT EESP SURVEY

**Participant EESP
Interview Guide**

CBEE Non-Res. SPC Evaluation

NAME	PHONE
TITLE	FAX
COMPANY	e-MAIL
STREET ADDRESS	
CITY	INTERVIEWER
STATE	CALL DATES
ZIP	COMPLETE DATE
D&B SALES	D&B EMPLOYEES

Hello, my name is _____ and I am calling on behalf of the California Board of Energy Efficiency (CBEE). We are contacting Energy Service Companies as part of a study of the market for energy efficiency services in California. May I please speak with _____?

As I mentioned, we are conducting a study on behalf of the California Board of Energy Efficiency (CBEE). As a part of this study, we are contacting a number of energy service companies in order to discuss a series of topics related to California's Standard Performance Contract (SPC) program and the broader market for energy efficiency services. Your input to this research would be very valuable and, if possible, we are interested in interviewing you on this topic. The interview will take approximately half an hour, and any information that is provided during the interview will remain strictly confidential. We will not identify or attribute any of your comments or company information. Is this a good time, or can we schedule a convenient time in the next couple of days to talk?

IF HESITANT: Your input to this survey is very important for ensuring the long-term success of these programs. Without input from industry representatives such as you, we cannot guarantee that the program will receive a fair and complete evaluation. I would like to fax or e-mail you a letter from the California Board for Energy Efficiency urging you to participate in this important research.

If scheduled: Callback date/time:

Thank you for taking part in this survey. The major purposes of this study are to (1) provide feedback to the CBEE on the design and administrative aspects of the program, (2) develop a baseline "snap-shot" of the market for energy efficiency services, and (3) assess changes that are occurring in the marketplace.

This interview is focused on experiences with the program to date and the current market for energy-efficiency services. We would also like to talk with you in a few months to gain additional feedback on your

experiences with the DPAs, Monitoring and Verification, and other aspects of the program that you may not have experienced yet.

I. BACKGROUND INFORMATION

B.1 For background purposes, I would like to first summarize the ways in which your firm has participated in the CBEE Non-residential SPC (NRSPC) program:

Has your firm:

1. submitted bids with your firm as sponsor? Yes: ____ bids
2. submitted bids with a customer as the sponsor? Yes: ____ bids
3. ____ # proposals under development currently:

B.2 Excluding projects already submitted, approximately how many proposals for NRSPC projects does your firm currently have under development with customers?

B.3 In which of the following service areas are you marketing and/or developing proposals for the NRSPC?

1. PG&E
2. SCE
3. SDG&E

B.4 Which of the following best describes the primary business area(s) of your firm?

Important: Note any unique "self-classification" terms.

1. "Traditional" ESCO (*predominantly performance-based contracts*)
2. Retail Energy Service Company (RESCO) (*selling both commodity and efficiency services*)
3. Architecture / Engineering / Equipment Specifier
4. Building Maintenance and Operations
5. Other (*please describe*):

B.5 Which of the following end-user services does your company provide:

	Service	Provided? (0=No, 1=Yes, by this company, 2= Yes, by affiliate company, 3= Plan to provide in the future)	Comments / Description / Affiliate Name
1	Non-Residential EE services and products		
2	Residential EE services and products		
3	Electric commodity		
4	Gas commodity		
5	Energy Planning / Consulting		
6	Customized billing		
7	Metering services		
8	Power quality		
9	Substation development		
10	O&M (HVAC, Ltg., process)		
11	Project financing**		
12	Energy performance contracting		
13	Other Primary (describe)		

** Definition for Performance Contracting: For the purposes of this survey, we are defining performance contracting as a retrofit or new construction project in which energy savings are measured and verified (based upon assumptions regarding the level of operation and the cost of energy being saved) and the company performing the work is paid only from total dollar savings actually produced by the project.

II. FIRMOGRAPHICS

F.1 In what year was your company founded?

____ YEAR founded

F.2A has your firm been involved in any recent merger and acquisition activity? Please describe.

F.2B Which of the following best describes the geographic focus of your operations?

1. Local
2. Regional
3. Statewide (California)
4. National
5. International

F.3 Do you have a California office?

0. No
1. Yes _____ (year founded)

F.4 How many years has your company been providing energy efficiency services in California?

____ # years providing energy efficiency services in California

F.5 Is this company:

1. Privately held
2. A public company
3. Subsidiary of a public company? (Company Name: _____)

[NOTE: if a public company, request copy of annual and 10K reports]

F.6 Approximately how many full-time equivalent employees (FTEs) do you employ, including all in-house contractors?

1. ____ # FTEs in California?
2. ____ # FTEs Nationally?

F.7 In California, has this number increased, decreased, or stayed about the same since 1996?

[PROBE, also, to explore qualitatively any trends since 1994, with peak in CA DSM expenditures]

1. ___% Increased
2. ___% Decreased
3. Stayed about the same

F.8 How many staff do you expect to be adding or reducing in the next 6 -12 months?

___ # expected to be added ___ # expected to be reduced

F.9 Which of the following services do you provide in-house, and approximately what percentage of your employees has primary responsibilities in these areas:

	Functional area	In-house / External? (0=External, 1= In-house, 2= Combination of in-house and external)
1	Sales Marketing	
2	Engineering design and equipment specification	
3	Project financing	
4	Installation labor	
5	Construction management	
6	Monitoring & verification	
7	Other (please specify)	

III. FINANCIAL INFORMATION

FI.1 Excluding commodity-based sales, approximately what were your company's annual revenues from California-based energy efficiency services in FY 1997?

0. Zero
1. Declined ...
2. \$ _____
3. not applicable

If declined: Approximately what percent of your firms annual revenue is from energy-efficiency services in California?

_____%

FI.1A Excluding commodity-based sales, approximately what do you project will be your company's annual revenues from California-based energy efficiency services in FY 1998? What percent will result from your participation in the Nonresidential SPC Program?

- 0. Zero
- 1. Declined ...
- 2. \$ _____
- 3. not applicable

_____ % from Nonresidential SPC

FI.2 Relative to your company's revenue from CA energy-efficiency services in 1996, did this level of activity represent an increase or decrease, and by approximately what percent? **[Probe for trends since 1994, as well, with peak in DSM funding]**

- 1. ___% Increase
- 2. ___% Decrease
- 3. About the same

FI.3 Approximately what % of your firm's total annual revenues from energy-efficiency services in California during 1997 was from performance contracting (in which payment occurs over time, based upon measured savings) as opposed to other types of energy-efficiency projects?

- 1. ___% from performance contracting
- 2. ___% other
- 99. Declined

FI.4 Referring to the following table, in which of the following activities is your company engaged (at least one project)? For the services which you provide, which would you consider to be the most important to the overall financial performance of your company (take top 3 in order)?

	Type of Service	Service currently provided? (0=No, 1=Yes)	Top Priorities (1-3)
	SERVICES		
1	Performance contracting		
2	Walk-through audits		
3	"Total energy management"*		
4	Investment-grade audits		
5	Fee-for-service installations		
6	Other (describe)		

**Refers to projects in which the energy service company takes over ownership/control of end-use equipment and sells the customer end-use services.*

Describe any information offered on why these are most important...

FI.5 Referring to the following table, in which of the following types of programs has your company participated (at least one project)? And, in terms of relative importance to your 1997 revenues, which are the most important (take top 3 in order)?

	Program	Participated in? (0=No, 1=Yes)	Top Priorities (1-3)
	PROGRAMS		
1	CA NRSPC program		
2	CA DSM Bidding programs		
3	CA Utility rebate programs		
4	Federal facilities (e.g., FEMP, 'Super ESPC', GSA AWC, BOA)		
5	EPA / DOE (e.g., Energy Star, Motor Challenge)		

FI.6 Which of the following types of facilities would you consider being within your target market. And, in terms of relative importance to your 1997 revenues, which are the most important (take top 3 in order)?

		Target Market? (0=No, 1=Yes)	Top Priorities (1-3)
1	Leased office		
2	Owner-occupied office		
3	Retail-Single Site		
4	Multi-site retail		
5	Institutional: Health		
6	Institutional: Univ./Schools		
7	Institutional: Government		
8	Industrial		
9	Residential		
10	Other (describe)		

FI.7 Is the average project size greater than, less than, or about equal to what it would have been two years ago?

1. Greater than
2. Less than
3. About the same
4. Declined

FI.8 In what percent of energy-efficiency projects do you provide the customer with some form of financing?

_____ %

IV. NSPC PROCESS-RELATED INFORMATION

P.1 Based upon your experiences, what do you view as the primary strengths of the SPC program?

P.2 Based upon your experiences, what do you view as the primary weaknesses of the SPC program?

P.3 Generally, is the NSPC design compatible with the ways in which your firm does business?

- 0. NO
- 1. Yes

Please Explain: _____

P.4 Are the forms reasonable, and the documentation clear?

- 0. NO
- 1. Yes

Please Explain: _____

P.5 Are the standard prices appropriate?

P.6 What are the pros and cons of end-use pricing (prompt to contrast one price and measure-specific pricing)

P.7 What would be the impact upon your current projects if the price had been

- 1. 50% lower?
- 2. 25% lower?
- 3. 25% higher?
- 4. 50% higher?

P.8 What percent of incremental measure costs (*i.e.* the difference between the cost of standard efficiency and higher efficiency equipment) would you estimate are covered by the NRSPC incentives?

- 1. _____% HVAC/Refrigeration
- 2. _____% Lighting
- 3. _____% other

P.9 Are the BPA requirements reasonable?

- 0. NO
- 1. Yes

Please Explain: _____

P.10 Are the DPA requirements reasonable?

- 0. NO
- 1. Yes

Please Explain: _____

P.11 Are the periods of time allowed between BPA and DPA submittal appropriate?

- 0. NO
- 1. Yes

Please Explain: _____

P.12 Are payment procedures and timing reasonable?

- 0. NO
- 1. Yes

Please Explain: _____

P.13 What are the pros and cons of shortening the time windows for filing DPAs?

P.14 What interim milestones might be added to the DPA process?

P.15 Is the use of Title 24 standards as a baseline appropriate?

- 0 0. NO
- 1 1. Yes

Please Explain: _____

P.16 What primary types of measures have you proposed installing in your SPC projects, and why have these measures and/or combinations of measures resulted?

P.17 Has your firm been successful in aggregating smaller customers in order to qualify for NRSPC incentives? Why / Why not?

- 0. NO
- 1. Yes

Please Explain: _____

P.18 What are the strengths and weaknesses of the current aggregation rules?

P.19 How might the program design be changed to increase the participation of smaller end users?

P.20 Have the standard M&V requirements helped or hindered your business development? In what ways?

1. Helped
2. Hindered
3. No Impact

P.21 What reactions have you had from customers regarding the M&V requirements?

P.22 How, if at all, have the M&V requirements influenced the mix of measures proposed?

P22A Do the M&V requirements add to the credibility of an EESP? How do program M&V requirements differ from your firm's standard practice, and have you adopted any of the program requirements as standard practice?

P.23 How, if at all, have the market share limits influenced your business development activities?

V. NRSPC-RELATED MARKET TRENDS

T.1 In what percent of cases in which you presented a customer with an NRSPC-related bid, was contact with the customer initiated by:

	Contact Initiation Method	% Bids
1	Proactive proposal to an existing or referred customer	
2	Proactive proposal to an entirely new customer (i.e., cold call, w/ no previous business history)	
3	Other (please describe)	

T.2 And what percent of these projects were developing in 1997 with the expectation of receiving rebates from utility programs at that time?

___ % associated with 1997 utility rebate programs.

T.3 In your opinion, what impacts do you see NRSPC having in the marketplace? (probe near-term vs. longer-term)

T.4A What percentage, if any, of current NRSPC projects for which BPAs were submitted in the 1st and 2nd quarters, were already in the "pipeline" from 1997 marketing activities versus being new ideas / proposals related to the NRSPC itself?

1. _____ % New ideas / proposals
2. _____ % in pipeline, not associated with utility rebate programs
3. _____ % in pipeline, associated with utility rebate programs

T.4B How, if at all, has the availability of NRSPC funding affected your business development activities?

T.5A How has the availability of SPC funding affected:

- (1) types of services your firm offers?
- (2) types of customers targeted?
- (3) marketing approaches used?

T.5B In general, what are the top challenges your company faces in gaining customer acceptance for energy efficiency services (*rank, but do not prompt initially*)?

- ___ Financing,
- ___ credibility,
- ___ technical understanding,
- ___ aligning competing interests within end user's organization
- ___ meeting customers' financial criteria for payback or ROI, hurdle rates
- ___ monitoring & verification
- ___ Other _____

PROBE: specifically how do these differ for performance contracting projects?

T.6 By segment, what unique barriers do you face in marketing energy efficiency services?

- Leased Office Space
- Owner-occupied Office Space
- Single-site Retail
- Multiple-site Retail
- Institutional
- Industrial

T.7 Some analysts believe that a shift may be underway that is taking the industry away from performance-based contracting and toward more fee-for-service based arrangements. Do you:

1. Strongly Agree
2. Agree
3. Disagree
4. strongly disagree

Please explain...

T.8 In general, how do you see electric industry restructuring impacting customer energy efficiency purchases?

T.9 Do you perceive that customers have delayed or accelerated investments in energy efficiency as a result of deregulation?

0. Neither delayed or accelerated
1. Delayed
2. Accelerated
3. Other

Please Explain: _____

T.10 Relative to 2 years ago, would you say that customer interest in energy efficiency services today is:

1. Substantially greater
2. Greater
3. About the same
4. Less
5. Much less

T.11 Looking two years into the future, do you expect that customer interest in energy efficiency services will be:

1. Substantially greater
2. Greater
3. About the same
4. Less
5. Much less

T.12 What are the primary factors limiting your company's growth?

T.13 Has your firm had any cash flow, investment, or other financial problems or constraints related to its energy-efficiency services business?

T.14 Excluding revenues from commodity-based transactions, what is your estimate of the potential annual market (in \$\$) for non-residential energy efficiency services in California?

VI. COMPETITIVE STRATEGIES

C.1 What types of contracts have you generally structured with customers/host facilities under NSPC?

1. ___ % Performance-based
2. ___ % Fee-for-service based
3. ___ % Other (please describe)

C.2 For non-SPC projects, what types of contracts have you generally structured with customers/host facilities?

1. ___ % Performance-based
4. ___ % Fee-for-service based
5. ___ % Other (please describe)

C.2B Have NRSPC customers generally requested multiple bids from EESPs, or were these mostly sole-source projects?

1. ___ % Sole source
2. ___ % 2-3 bids
3. ___ % 3 bids

C2C Is what percent of your projects is your firm acting on a "turn-key" basis? (i.e. projects in which all equipment costs flow through your firm's accounting records)

___ % projects

C2D In cases where you have entered into performance contracts, do these contracts allow payment for partial savings?

0. No
1. Yes
2. Not Applicable

C.3 Does the program increase or decrease the time and expense it takes to get a customer to "YES"? Probe to identify the primary issues that have led to losses / cancellations / stalling of projects? Have these changed with the NRSPC?

Please describe:

C.4 Has the NRSPC led your company to change any of its marketing, advertising, branding, financing, or other business strategies?

- C.5** For NRSPC projects in which you are a sponsor, what proportion, if any, of program incentives did you pass through to the customer to reduce incremental measure costs as opposed to applying them to offset your own marketing, project development, and M&V costs?
1. ___% passed-through to customers
 2. ___% used to off-set other operating costs
- C.6** What are the primary selling points (value propositions) that you use, and how have these changed with NSPC?
- C6A** What steps has your firm taken to ensure that it's business is viable in a post-SPC environment?
- C.7** (For respondents who previously stated that they provide electric commodity) In what percent of bids have you bundled electric commodity and energy efficiency services?
- C.8** How important are energy efficiency services to your successful bundled deals compared with other non-commodity factors? (e.g., billing and metering services, power quality services, UDC tariff negotiation, etc.) Would you say they are:
1. Very important
 2. Somewhat important
 3. Important
 4. Not very important
 5. Not at all important?
- C.9** For NRSPC projects in which you are the Sponsor, did the incentive affect your margin relative to non-NRSPC projects? If so, were margins generally higher or lower on NRSPC projects? *Please describe.*

E.4 PARTICIPANT EESP RE-INTERVIEW SURVEY

NSPC Participating EESP Re-interviews

General Update...

- Briefly, since we last talked in the Fall, how have your efforts progressed on the NSPC program?
- What stage are your 1998 NSPC projects at? (completed DPA? Installation complete?) Please describe in detail for each project.
- Please provide any necessary update of your experience with and opinions on the strengths and weaknesses of the DPA submittal and review process, M&V requirements, PIR, or contract requirements.
- What have you developed in the way of projects for PY99? And, briefly, how are these progressing? Reminder: this program is not on the street yet and won't be until March, perhaps not till late March. This question could be a good indicator of whether there will be a "rush" again because of the delay in '99 startup.]

Reactions to PY99 Modifications...

- A number of modifications were implemented for the program in 1999. (If necessary, prompt with examples of changes)

Prompt as necessary:

- Pricing reduced to: \$0.05/kWh Lighting; \$0.16.5 HVAC; \$0.08 Other. Plus fixed payment incentives of \$1,000 for lighting; \$2,500 for HVAC, and \$1,500 for Other; per Host Customer in each territory.
- BPA now includes a site survey or audit, a preliminary M&V plan, and identification of the "ultimate" ownership [*i.e., parent*] of the EESP and customer.
- Submittal times for DPAs are now: After BPA approval: 45 days for lighting and 100 days for non-lighting.
- New funding level caps of: \$0.4 million per customer site within each territory; \$1.5 million statewide for corporate parents and government parents (e.g., state and federal *agencies*, see *filing for list*); and \$6.0 million for *all* State government and Federal government, respectively.
- Directive to revisit M&V [Note this is only a generic recommendation to "seek efficiency improvements" with stakeholders and no action has been taken yet in the public domain.]

- Finally, addition of the Small Customer SPC program itself.]

- Which of these is, from your perspective, most significant? Please describe how and why these are significant..

- Have the changes implemented for PY99 helped or hindered your firm's ability to develop, market, and complete projects under the NSPC program? Please explain. [Note whether this is really a "Have..." or a "Will...", i.e., are they marketing under what they think '99 will be or have we just informed them of this.

- Do you have any other comments or observations with respect to the PY99 modifications?

Potential Changes in Business Practices...

- During the past 6-8 months, what changes have you seen with respect to your overall energy services business? (probe for increase/decrease in sales, changes in types of projects, etc.)

- During the past 6-8 months has your firm merged with, or acquired, any other firms?

- During the past 6-8 months, has your firm embarked upon any new strategic alliances with other firms?

- Has there been any marked change in the makeup of the competition your firm faces in the marketplace?

- Has your firm made any significant changes in the ways it brands, markets, targets, develops, or implements new projects?

- Over this same period, has your firm developed or offered any new energy-efficiency-related products and services? If so, please specify. If so, has the SPC program played any role in your decision to offer these products or services?

- Have you noticed any impact upon your firm's business practices that have resulted from your participation in the NSPC program?

- Do you feel that the NSPC program has helped, hindered, or had no effect upon the overall success of your firm's energy efficiency services business area?

- Do you offer electric commodity as one of your products? What is your opinion on the relationship, if any, between the direct access market for electricity supply and the market for energy-efficiency services? Do you think there is any trend, one way or another, toward customers preferring to purchase efficiency services with, or separate from, electric commodity?

- To date, do you think the SPC program has affected the market for performance contracting in comparison with other contract approaches, such as straight fee-for-service. If so, please provide examples of how you think this is occurring.
- Have your firm's M&V capabilities changed at all over the past year as a result of your participation in the SPC program? For example, you may be outsourcing or "in"-sourcing M&V activities more or less than you were before. Please explain.
- Has your participation in the SPC program led to any referrals to new customer prospects or repeat business? Please explain.
- Can you provide a rough estimate of the percentage of SPC incentive costs that you expended or expect to expend on M&V? And how about for BPA/DPA submittals? [Caution, respondents not to over-exaggerate as it is possible if they did so, further inquiry would be initiated to confirm or deny their claims.]
- Similarly, can you provide a rough estimate of the ratio of private dollars that are leveraged on your projects per dollar of incentive funds? (Alternatively, what percent of project costs are covered by the incentives; note that this may not be the same as what is submitted in the forms because it does not include participant spillover).

Directions for PY 00 - beyond...

- Do you have any suggestions for how this program should be modified, if at all, as it continues beyond the 1999 program year?

E.5 NON-PARTICIPANT EESP INTERVIEW GUIDE

CBEE Non-Res. SPC Evaluation

NAME	PHONE
TITLE	FAX
COMPANY	e-MAIL
STREET ADDRESS	
CITY	INTERVIEWER
STATE	CALL DATES
ZIP	COMPLETE DATE
D&B SALES	D&B EMPLOYEES

Hello, my name is _____ and I am calling on behalf of the California Board of Energy Efficiency (CBEE). We are contacting Energy Service Companies as part of a study of the market for energy efficiency services in California. May I please speak with _____?

As I mentioned, we are conducting a study on behalf of the California Board of Energy Efficiency (CBEE). As a part of this study, we are contacting a number of energy service companies in order to discuss a series of topics related to California's Non-residential programs, including the Standard Performance Contract (SPC) program, and the broader market for energy efficiency services. Your input to this research would be very valuable and, if possible, we are interested in interviewing you on this topic. The interview will take approximately half to three quarters of an hour, and any information that is provided during the interview will remain strictly confidential. We will not identify or attribute any of your comments or company information. Is this a good time, or can we schedule a convenient time in the next couple of days to talk?

IF HESITANT: Your input to this survey is very important for ensuring the long-term success of these programs. Without input from industry representatives such as you, we cannot guarantee that the program will receive a fair and complete evaluation. I would like to fax or e-mail you a letter from the California Board for Energy Efficiency urging you to participate in this important research.

If scheduled: Callback date/time:

Thank you for taking part in this survey. We are interested specifically in talking with firms that have not participated in some of the CBEE programs, especially the SPC.. The major purposes of this study are to (1) provide feedback to the CBEE on the design and administrative aspects of non-residential programs, (2) develop a baseline "snap-shot" of the market for energy efficiency services, and (3) assess changes that are occurring in the marketplace.

This interview is focused on experiences and awareness of non-residential programs, as well as the current market for energy-efficiency services. We would also like to talk with you in a few months to gain additional feedback on your experiences, if any, with the program.

I. BACKGROUND

BA1. First, we are interested in finding out what you think non-residential customers in the marketplace want or need in terms of services, incentives, or other assistance to get them to increase purchases of energy efficient equipment, or to get them to increase the priority of energy efficiency in decisionmaking or operations? (start for ranging discussion; might cover money, technical information, choosing firms, etc.)

BA2. Do you see particular barriers or problems in the market place that keep energy efficiency as a lower priority in decisionmaking in commercial / industrial firms?

BA3. Next, we'd like to discuss what kinds of assistance you think might be helpful in order to improve the ability of you or your firm to sell more energy efficiency products or services to non-residential customers. We'd like you to "blue sky" here... (start for discussion; might cover incentives, leads, technical assistance, standardized program, information sources, etc.)

BA4. Based upon your experience, or on past experiences with utility-sponsored programs, can you think of program designs or services that would help you provide more energy efficiency services in the non-residential sector? (probe for specifics about previous programs that provide good and bad examples, etc.)

BA5. Prior to this call, how familiar would you say you were with the CBEE's Non-residential SPC program? (if not familiar, provide a brief summary so they can determine if they heard of it, but didn't remember the name, etc.)

- very familiar
- somewhat familiar
- not very familiar
- not at all/never heard of

B.1. How would you characterize the status of your company with respect to the California Non-Residential SPC programs for 1999?

1. We intend to participate in the SPC program
2. We do not plan to participate in the SPC program
3. Other (*Please explain*)

B.2. Are you working with customers who are participating as 1998 sponsoring EESPs?

- 0. No
- 1. Yes

B.3. How familiar would you say that you are with the following aspects of the CBEE Non-residential SPC program design:

	2. Very familiar	1. Somewhat familiar	0. Not at all familiar
Overall Design			
Incentive Levels			
Administrative Procedures			
M&V Requirements			

B3A. Thinking about the types of program services that we've discussed, and the SPC program we mentioned, do you have any suggestions about acceptable or appropriate (and unacceptable) roles for various actors that might be associated with these types of non-residential program services?

The potential actors might include: CBEE; CPUC; CEC; Utilities; Administrators; ESCOs; Professional associations; selected consultants; other actors.

(walk through each of the key activities / program aspects discussed and list acceptable and/or unacceptable actors, if they have preferences. To reflect the SPC, add program design, identifying eligible measures, setting prices; setting verification standards; conducting verification).

B.4 (If intending to participate...) In which of the following service areas are you marketing and/or developing proposals for the NRSPC?

- 1. PG&E
- 2. SCE
- 3. SDG&E

B4A. Is your firm active with projects in California now? Has it been in the past? If not now, are there specific issues or considerations in California that make it unattractive for you to provide services there? What specific changes in the California marketplace or in programs would be needed to help your firm become more interested in providing service in the California marketplace?

Now: Y N
In past: Y N
Considerations (specify):
Changes needed: (specify)

B4B: How important is energy efficiency in terms of the types of products and services that you provide to non-residential customers?

Core business area – it is our key business;

very important;

somewhat important;

not very important, mostly provided in response to customer requests,

not at all important.

B.5 Which of the following best describes the primary business area(s) of your firm?

Important: Note any unique "self-classification" terms.

1. "Traditional" ESCO (*predominantly performance-based contracts*)
2. Retail Energy Service Company (RESCO) (*selling both commodity and efficiency services*)
3. Architecture / Engineering / Equipment Specifier
4. Building Maintenance and Operations
5. Other (*please describe*):

B.6 Which of the following end-user services does your company provide:

	Service	Provided? (0=No, 1-=Yes, by this company, 2= Yes, by affiliate company, 3= Plan to provide in the future)	Comments / Description
1	Non-Residential EE services and products		
2	Residential EE services and products		
3	Electric commodity		
4	Gas commodity		
5	Energy Planning / Consulting		
6	Customized billing		
7	Metering services		
8	Power quality		
9	Substation development		
10	O&M (HVAC, Ltg., process)		
11	Project financing		
12	Energy performance contracting		
13	Other Primary (describe)		

B7. Can you estimate the percent of jobs that you bid, you specify equipment that exceeds Title24/Title 20 standards?

Equipment type	Pct that meets T24/T20	Pct that exceeds T24/T20	Doesn't know
Overall			
HVAC			
Lighting			
Refrigeration			
Motors			
Shell / windows, ins,			
Other			

Follow-up: When you do offer bids in which you include options that exceed efficiency standards, in what percent of the projects that you win does your customer accept the high-efficiency bid?

B8 Do you or your firm belong to any professional or trade associations or organizations? If so, which ones? What kinds of services do they offer or do you participate in? (let them respond, but then prompt for others and list those that apply. Services include: training, newsletters, conferences, marketing, lobbying, networking, certification, other)

V. NRSPC PROCESS-RELATED INFORMATION

With the understanding that your direct experience with the program is limited, we are interested in your feedback on the design of the SPC program, as well as its procedures and requirements...

Note: If respondent does not know, or has not had enough experience to answer, leave blank.

P.1 Based upon your experiences, what do you view as the primary strengths of the SPC program?

P.2 Based upon your experiences, what do you view as the primary weaknesses of the SPC program?

P.3 Generally, is the NSPC design compatible with the ways in which your firm does business?

0. NO

1. Yes

Please Explain: _____

NOTE TO REVIEWERS: Questions P4, P9 - P12 cut. (SEE SECTION NEAR THE END TO REVIEW THOSE QUESTIONS)

- P.5** Are the standard prices appropriate?
- P.6** What are the pros and cons of end-use pricing (prompt to contrast one price and measure-specific pricing)
- P.18** What are the strengths and weaknesses of the current aggregation rules?
- P.19** How might the program design be changed to increase the participation of smaller end users?
- P.20** Do you perceive that the standard M&V requirements helped or hindered your business development? In what ways?
1. Helped
 2. Hindered
 3. No Impact
- P.21** How do you think customers will react to the M&V requirements?
- P.22** How, if at all, will the M&V requirements influenced the mix of measures that your firm proposes?

II. FIRMOGRAPHIC INFORMATION

- F.1** In what year was your company founded?
- _____ YEAR founded
- F.2A** has your firm been involved in any recent merger and acquisition activity? Please describe.
- F.2B** Which of the following best describes the geographic focus of your operations?
1. Local
 2. Regional
 3. Statewide (California)
 4. National
 5. International
- F.3** Do you have a California office?
0. No
 1. Yes _____ (year founded)
- F.4** How many years has your company been providing energy efficiency services in California?

___ # years providing energy efficiency services in California

F.5 Is this company:

1. Privately held
2. A public company
3. Subsidiary of a public company? (Company Name: _____)

[NOTE: if a public company, request copy of annual and 10K reports]

F.6 Approximately how many full-time equivalent employees (FTEs) do you employ, including all in-house contractors?

1. ___ # FTEs in California?
2. ___ # FTEs Nationally?

F.7 In California, has this number increased, decreased, or stayed about the same since 1996?
[PROBE, also, to explore qualitatively any trends since 1994, with peak in CA DSM expenditures]

1. ___% Increased
2. ___% Decreased
3. Stayed about the same

F.8 How many staff do you expect to be adding or reducing in the next 6 -12 months?

___ # expected to be added _____ # expected to be reduced

F.9 Which of the following services do you provide in-house, and approximately what percentage of your employees has primary responsibilities in these areas:

	Functional area	In-house / External? (0=External, 1= In-house, 2= Combination of in-house and External)
1	Sales Marketing	
2	Engineering design and equipment specification	
3	Project financing	
4	Installation labor	
5	Construction management	
6	Monitoring & verification	
7	Other (please specify)	

III. FINANCIAL INFORMATION

FI.1 Excluding commodity-based sales, approximately what were your company's annual revenues from California-based energy efficiency services in FY 1997?

- 0. Zero
- 1. Declined ...
- 2. \$ _____
- 3. not applicable

If declined: Approximately what percent of your firms annual revenue is from energy-efficiency services in California?

_____ %

FI.1A Excluding commodity-based sales, approximately what do you project will be your company's annual revenues from California-based energy efficiency services in FY 1998? What percent will result from your participation in the Nonresidential SPC Program?

- 0. Zero
- 1. Declined ...
- 2. \$ _____
- 3. not applicable

_____ % from Nonresidential SPC

FI.2 Relative to your company's revenue from CA energy-efficiency services in 1996, did this level of activity represent an increase or decrease, and by approximately what percent? **[Probe for trends since 1994, as well, with peak in DSM funding]**

- 1. ___% Increase
- 2. ___% Decrease
- 3. About the same

FI.3 Approximately what % of your firm's total annual revenues from energy-efficiency services in California during 1997 was from performance contracting (in which payment occurs over time, based upon measured savings) as opposed to other types of energy-efficiency projects?

- 1. ___% from performance contracting
- 2. ___% other
- 99. Declined

FI.4 Referring to the following table, in which of the following activities is your company engaged (at least one project)? For the services which you provide, which would you consider to be the most important to the overall financial performance of your company (take top 3 in order)?

	Type of Service	Service currently provided? (0=No, 1=Yes)	Top Priorities (1-3)
	SERVICES		
1	Performance contracting		
2	Walk-through audits		
3	"Total energy management"*		
4	Investment-grade audits		
5	Fee-for-service installations		
6	Other (describe)		

**Refers to projects in which the energy service company takes over ownership/control of end-use equipment and sells the customer end-use services.*

Describe any information offered on why these are most important...

FI.5 Referring to the following table, in which of the following types of programs has your company participated (at least one project)? And, in terms of relative importance to your 1997 revenues, which are the most important (take top 3 in order)?

	Program	Participated in? (0=No, 1=Yes)	Top Priorities (1-3)
	PROGRAMS		
1	CA NRSPC program		
2	CA DSM Bidding programs		
3	CA Utility rebate programs		
4	Federal facilities (e.g., FEMP, 'Super ESPC', GSA AWC, BOA)		
5	EPA / DOE (e.g., Energy Star, Motor Challenge)		

FI.6 Which of the following types of facilities would you consider being within your target market. And, in terms of relative importance to your 1997 revenues, which are the most important (take top 3 in order)?

		Target Market? (0=No, 1=Yes)	
1	Leased office		
2	Owner-occupied office		
3	Retail-Single Site		
4	Multi-site retail		
5	Institutional: Health		
6	Institutional: Univ./Schools		
7	Institutional: Government		
8	Industrial		
9	Residential		
10	Other (describe)		

FI.8 In what percent of energy-efficiency projects do you provide the customer with some form of financing?

_____%

IV. DECISIONS TO PARTICIPATE / NOT PARTICIPATE

D.1 Please describe why your company chose not to participate as a project sponsor in this program during 1998?

D.2 What factors are most likely to influence your decision to participate in 1999?

D.3 How likely is it that your firm will participate in the Non-Res SPC during 1999

- 0. Not at all likely
- 1. Somewhat likely
- 2. Very likely

VI. MARKET TRENDS

T.3 In your opinion, what impacts do you see NRSPC having in the marketplace? (probe near-term vs. longer-term)

T.5B In general, what are the top challenges your company faces in gaining customer acceptance for energy efficiency services (*rank, but do not prompt initially*)?

- ___ Financing,
- ___ credibility,
- ___ technical understanding,
- ___ aligning competing interests within end user's organization
- ___ meeting customers' financial criteria for payback or ROI, hurdle rates
- ___ monitoring & verification
- ___ Other _____

PROBE: specifically how do these differ for performance contracting projects?

T.7 Some analysts believe that a shift may be underway that is taking the industry away from performance-based contracting and toward more fee-for-service based arrangements. Do you:

- 1. Strongly Agree
- 2. Agree
- 3. Disagree
- 4. strongly disagree

Please explain...

T.8 In general, how do you see electric industry restructuring impacting customer energy efficiency purchases?

T.9 Do you perceive that customers have delayed or accelerated investments in energy efficiency as a result of deregulation?

0. Neither delayed or accelerated
1. Delayed
2. Accelerated
3. Other

Please Explain: _____

T.10 Relative to 2 years ago, would you say that customer interest in energy efficiency services today is:

1. Substantially greater
2. Greater
3. About the same
4. Less
5. Much less

T.11 Looking two years into the future, do you expect that customer interest in energy efficiency services will be:

1. Substantially greater
2. Greater
3. About the same
4. Less
5. Much less

T.12 What are the primary factors limiting your company's growth?

T.13 Has your firm had any cash flow, investment, or other financial problems or constraints related to its energy-efficiency services business?

T.14 Excluding revenues from commodity-based transactions, what is your estimate of the potential annual market (in \$\$) for non-residential energy efficiency services in California?

VII. COMPETITIVE STRATEGIES

C.2 For non-SPC projects, what types of contracts have you generally structured with customers/host facilities?

1. ___ % Performance-based
2. ___ % Fee-for-service based
3. ___ % Other (please describe)

C.7 (For respondents who previously stated that they provide electric commodity) In what percent of bids have you bundled electric commodity and energy efficiency services?

C.8 How important are energy efficiency services to your successful bundled deals compared with other non-commodity factors? (e.g., billing and metering services, power quality services, UDC tariff negotiation, etc.) Would you say they are:

1. Very important
2. Somewhat important
3. Important
4. Not very important
5. Not at all important?

E.6 UTILITY INTERVIEW AND RE-INTERVIEW GUIDE

NSPC Utility Interview/Re-Interview Guide

PROGRAM DESIGN AND OBJECTIVES

- Please provide a brief recap of the programs goals from your perspective.
- Have you achieved these goals?
- Has the program worked as intended?
- Have you observed any gaming in terms of the application process?
- Are there any changes in the basic program design that you would recommend beyond those already incorporated into the 1999 programs?

PROMOTION OF THE NSPC

For any 1998 program workshops held since the last utility interviews, i.e., post- August 1998:

- NSPC workshops / diffusion of information about the program?
- Who attended the workshops? (EESPs vs. Customers -- List)
- How were these workshops advertised?
- What types of follow-up have been undertaken with these attendees?
- What percent of attendees actually ended up submitting bids?
- Why did the others not submit bids?

MARKET EFFECTS

- What impact is the program having upon the marketplace?
- Are you seeing innovation in project design?
- What types of measures are being installed?
- Have you seen any changes in the level of interest in the marketplace? (perhaps as evidenced by information requests?)
- Any new thoughts on early or potential market effects not covered elsewhere?

ADMINISTRATION

Organization

- Any new administrative / organizational issues?
- Satisfaction with technical consultants

APPLICATION PROCESS / PROCEDURES

Detailed Project Application (DPA)

- Who reviews the applications?

- In addition to “hard” criteria, are there “soft” criteria as well?
- Quality of applications?
- Innovation?
- Approval logistics?
- Percent approved?
- Reasons rejected?
- Any projects withdrawn? Why?
- Issues around M&V plan approval
- Pre-installation inspection?
- Accuracy of forms, relative to pre-installation inspection?
- General discussion around actual versus planned time lag in DPA approvals
- Recommendations for addressing lags for 1999

Contract Signing Process

- How many and what percent of projects have had contracts signed?
- What issues have come up around the contract signing process?

Project Installation Reporting Process

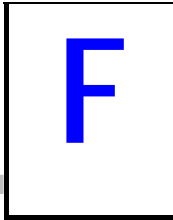
- Have any projects made it this far?
- Describe process and issues to date

Invoicing / Payment

- Any projects through installation and have submitted for first payment?
- Any first payments made?
- Discuss process and issues

M&V Reports

- Confirm no projects this far.
- Discuss any anticipated issues.



In this appendix, we present background information on several topics related to the development of the samples and analyses presented in the main report. The specific topics covered include:

- Underlying Methods
- Baseline End User Sampling Approach
- Participant Customer Sampling Approach
- EESP Sampling Approach
- Net-to-Gross Estimation Approach

F.1 UNDERLYING METHODS

In this subsection we present a brief discussion of the overarching research methods that underlie the current and expected future evaluations of the NSPC. The discussion herein is intended to provide a brief context to help less familiar readers understand the rationale for the various research elements enumerated in Section 2 of this report.

There are three basic methods that are generally used to assess the extent to which energy-efficiency program interventions contribute to changes in markets. These methods are:

- Self-reports,
- Cross-sectional analysis, and
- Longitudinal analysis.

All of the methods above are expected to be utilized to assess the hypothesized market effects of the NSPC program. These methods are discussed very briefly below. For more information on the strengths and weaknesses of these approaches see the sources referenced below.¹

Self-reports. In this method, information is collected from market actors concerning their motives for adopting or promoting energy-efficient products and services. This information is usually developed through tightly structured survey questionnaires for large samples or in-depth interviews of smaller samples. In applying this approach, it is important to look for corroboration of

¹ See, for example, *Performance Impacts: Evaluation Methods for the Nonresidential Sector, Chapter 6: Estimating Spillover and Market Transformation*, prepared by XENERGY Inc. for the Electric Power Research Institute, TR-105845, December 1995, and *Quality Assurance Guidelines for Statistical, Engineering, and Self-Report Methods for Estimating DSM Impacts*, prepared for the California Demand Side Management Advisory Committee: The Subcommittee on Modeling Standards for End Use Consumption and Load Impact Models, April 1998.

attribution from different groups of market actors. For example, if manufacturers report that they increased volumes of efficient equipment production in response to opportunities created by efficiency programs, and we receive contemporaneous reports of increased product availability from distributors and customers in the program area, then we can assign greater weight to the manufacturers' attribution of program influence. The major limitations of this approach are that it often relies on customer's *recollection* of program influence and upon their ability to sort out the relative weight of numerous possible influences on energy-related decisions. In addition, customers (especially non-participants) may be unaware of program influence if their purchase decisions were affected by trade allies who had direct dealings with the program in question.

Cross-sectional Comparison. This method involves comparison of the behavior of market actors who have been affected by the program in question to the behavior of market actors who have not been exposed to any energy-efficiency programs. To the extent that indicators of market effects or changes can be found among market actors in the "program area" but not among those in the "non-program" area, these effects may be considered to be attributable to the program.² The comparison between program and non-program areas can be carried out in a number of ways. One is to make a simple comparison of the penetration of efficient measures or practices, based on customer survey data or reports from supply-side market actors. Another is to use survey data on measure purchases and customer characteristics from program and non-program areas to model the effect of the program using techniques such as discrete choice analysis.

Longitudinal Comparison. This method involves examination and comparison of the behavior of market actors who have been affected by a program intervention over time. Ideally, longitudinal analyses are conducted using information collected *prior to, during* and *after* the intervention in question. If no other factors that influence the markets being studied change over the period of observation, then any changes that are observed can be attributed with more confidence to the intervention being studied. Of course, this is seldom the case, particularly in complex and dynamic markets such as the ones that are the target of the NSPC program. In cases in which important non-program factors are changing over the period of intervention, additional must be paid to controlling for the effects of these other factors, and trying to isolate those of the intervention.

The limitations of each of the approaches above was considered in the design of the NSPC evaluation. As a result, the NSPC study design purposefully incorporates elements of each approach. Combining these approaches provides the best possible basis for corroborating findings and controlling for changes that occur in the target markets that are not attributable to the program intervention. For example, referring back to Figure 2-1 and Table 2-1 in Section 2, note that the baseline survey of nonresidential end users includes a cross-sectional element (i.e., the surveys are being conducted, one of California end users and one of a control group of non-California end users). At some time in the future, a second set of surveys will be conducted of these same markets. With this information it will be possible to conduct both cross-sectional and longitudinal analyses of the energy-efficiency related practices in the non-residential sector.

² In practice, of course, it is difficult to find perfect control areas, that is, areas that are identical to the program area in every way except with respect to the intervention in question. As a result, efforts must often be made to normalize for non-intervention differences between the two areas.

F.2 SUMMARY OF BASELINE SAMPLING PROCESS

In this subsection we discuss the sampling process utilized for the baseline study of end users presented in Section 5 of this report. There are seven key elements of the sampling process of which readers should be aware:

- Selection of population frame for drawing the sample
- Selection of the design variable
- Determination of segments to incorporate into the sample design
- Sample allocation approach
- Selection of the non-California comparison area
- Actual samples completed
- Sample Weights

F.2.1 Selection of Population Frame

A decision was necessary at the outset of this study regarding whether to use utility computer information systems as the population frame for this study or to use proprietary business census databases such as Dun and Bradstreet's MarketPlace (D&B) product. Based on our experience on previous, related studies, we chose to work with the D&B product as the population frame for our samples for the following reasons:

- *Reasonably complete listing of nonresidential establishments.* We have learned through previous work that a sizable portion of decision makers were tenants who did not pay utility bills directly. Hence they would not be represented in utility customer lists.
- *Each establishment is characterized by primary SIC code.* This allows mapping of all customers to business types that can be organized to reflect energy intensity, decision making practices, and other relevant factors.
- *Each establishment characterized by size variables which include number of employees and sales (of the parent organization).* This information can then be used to estimate energy usage using conversion factors discussed later in this section.
- *Each establishment includes an indicator of whether it is a single-site or part of a multi-site organization.*
- *Obtaining utility frames for the three service territories would be difficult and obtaining them for the non-California areas would be impossible.* Rather than trying to control for differences between frame types within and outside of California, it is better to use a consistent frame for both.

F.2.2 Selection of Design Variable

There are several possible sampling design variables for a baseline study of this type. The principal potential variables and their associated pros and cons for this study are shown in Table F-1.

**Table F-1
Issues Associated with Selection of Sample Design Variable for Baseline Survey**

Parameter	Pros	Cons
Number of establishments	Readily available on D&B database	Extremely poor indicator of energy use and potential savings. 80+% of establishments make up only 20% of energy use
Energy use	Closest to key parameter of interest, namely, percent of energy for which performance contracting and energy-efficiency services have been implemented, as well as other indicators.	Not directly available from D&B database. Must be estimated through a conversion process that uses number of employees, which is available from D&B.
Square footage	Generally useful in that it is closely correlated with energy use. Floorspace is also commonly used in a variety of forecasting and planning analyses.	Not directly available from D&B database. Would have to be estimated via number of employees parameter. Also, floorspace is much more useful for commercial sector analyses than it is for industrial.
Number of employees	Readily available on D&B database.	Must be converted to energy use or square footage to provide units of analysis of interest.

Based on the pros and cons outlined in the table above, energy use was selected as the sample design parameter of greatest importance. This variable was then used for sample allocation purposes as described below.

F.2.3 Determination of segments to incorporate into the sample design

A variety of sample designs were considered for the baseline component of this study. The key tradeoff in considering alternative designs were the extent to which alternative sample designs would support meaningful segmentation of results and the cost and practicality of implementing the designs. Based on previous research, the following types of segmentation were desired for this study:

- Customer business type
- Customer size
- Occupancy status (own versus lease)

- Ownership type (single site versus multi-site)

After a number of exploratory analyses were conducted using the D&B population data. As a result of these analyses it was determined that the most practical and cost-effective sample design would include customer business type and customer size as the key segmentation variables. We determined that a stratified random sample based on these two variables would also be highly likely to provide adequate sample sizes by occupancy status and ownership status as well. Based on the samples actually completed, this was indeed the case.

The customers included in the sample include all nonresidential customers except agricultural. These customers are mapped by primary SIC code into six major segments. These segments were selected based on past experience analyzing which segments explain much of the observed variation in customers' decision-making patterns for energy efficiency. The six segments are as follows:

- Office
- Retail
- Institutional
- Other Commercial
- High Industrial
- Low Industrial

Note that the California population frame of interest for this analysis comprises the SCE, SDG&E, and PG&E's service territories. In order to define the frame for each of the three regions, each was defined based on location and SIC code. Each non-residential 2-digit SIC code was mapped into one of six segments types listed above based, as closely as possible, on the SIC mappings used by the California Energy Commission. The segment mappings utilized are shown in Table F-2.

Table F-2
Mapping of D&B Business Types to Sampling Segments

Detailed Business Type	Segment	Detailed Business	Segment
Agricultural	Not included	Mining	High Industrial
Apparel	Low Industrial	Misc Industrial	Low Industrial
Chemicals	High Industrial	Office	Office
Construction	Low Industrial	Other	Other
Education	Institutional	Paper	High Industrial
Electronic	Low Industrial	Petroleum	High Industrial
Fabricated	Low Industrial	Primary	High Industrial
Food	Low Industrial	Printing	Low Industrial
Furniture	Low Industrial	Restaurant	Retail
Government	Institutional	Retail	Retail
Grocery	Retail	Rubber	Low Industrial
Health	Institutional	Stone	Low Industrial
Instruments	Low Industrial	TCU	Other
Leather	Low Industrial	Textile	Low Industrial
Lodging	Other	Tobacco	Low Industrial
Lumber	Low Industrial	Transport	Low Industrial
Machinery	Low Industrial	Wholesale	Other

F.2.4 Energy Estimation, Size Strata, and Sample allocation

The D&B MarketPlace database contains data that includes number of employees, sales data, and number of years in business, but does not include information on energy consumption. In order to characterize the energy use attributable to each building type, we developed a factor of electric use per employee using:

- Commercial - The factors were developed using 1992 Commercial Buildings Energy Consumption Survey (CBECS) data. A subset of the data covering the Pacific region was used to calculate the weighted sum of electricity consumption and number of employees for each building type;
- Industrial - The net demand for electricity for each SIC was taken from Table A12 of the 1994 MECS data (national). The number of employees was pulled from Table 1 of the 1994 Annual Survey of Manufacturers. (Scenario A is based on 1991 MECS data).
- Agricultural, Mining and Construction - Electricity consumption was taken from an Office of Technology Assessment report (Table 4-4 1987 consumption). The number of employees was taken from D&B MarketPlace.
- The factors were developed as the sum of electricity consumption divided by the sum of the number of employees.

In order to check the accuracy of these assumptions, as well as to determine which to use, the resulting energy use estimates were compared to the CEC's non-residential forecast for 1998. As

shown in the table below, the results were very consistent for total non-residential energy use; however, there are significant differences at the class level. For this reason, we have split our sample allocation of 500 points proportionally between commercial and industrial based on the CEC's class estimates. That is, the allocation described in the section that follows occurs within each class for roughly 333 (66%) commercial and 167 (33%) industrial sample points.

Comparison of Energy Estimates from D&B with CEC

Class	D&B Based		CEC '98 Forecast		Energy Ratio
	Energy	% Total	Energy	% Total	
Commercial	72,889	49%	102,000	66%	71%
Industrial	76,460	51%	53,000	34%	144%
Total	149,349	100%	155,000	100%	96%

Allocation of Sample

Each business type was divided into four size strata (1) small, (2) medium, (3) large, and (4) very large) based on estimated energy usage. The allocation was done for the commercial and industrial classes separately as discussed in the previous section by first splitting the 500 data points budgeted for the California sample between the two classes based on the CEC's latest class usage data. The rough breakdown of *estimated* (via the process previously described) total nonresidential energy consumption and number of establishments represented by each strata and business type sector is shown in the tables below:

CA Estimated Energy Consumption

Sector	Estimated Energy (kWh)				Total
	Strata 1	Strata 2	Strata 3	Strata 4	
1. office	3,223,526,819	3,893,905,680	2,426,572,928	1,104,925,554	10,648,930,981
2. retail	4,912,680,542	7,698,545,694	3,934,186,535	244,882,216	16,790,294,986
3. institutional	2,002,960,091	5,803,098,989	5,970,210,447	5,100,068,209	18,876,337,736
4. other	8,268,709,114	9,567,338,256	6,052,624,033	2,685,016,043	26,573,687,445
5. high indust	2,154,620,441	11,972,790,691	17,612,133,029	10,692,396,814	42,431,940,975
6. low indust	2,871,769,271	10,986,295,647	14,902,608,004	5,266,994,022	34,027,666,944
Grand Total	23,434,266,278	49,921,974,956	50,898,334,976	25,094,282,857	149,348,859,067

CA Number of Facilities

Sector	Number of Facilities				Total
	Strata 1	Strata 2	Strata 3	Strata 4	
1. office	162,028	23,682	1,666	76	187,452
2. retail	147,908	30,263	2,049	13	180,233
3. institutional	55,285	15,846	2,743	244	74,118
4. other	276,295	41,632	2,961	130	321,018
5. high indust	2,857	1,825	366	22	5,070
6. low indust	95,711	24,038	2,958	113	122,820
Grand Total	740,084	137,286	12,743	598	890,711

There are a number of ways of allocating sample points for a discrete variable which are often based on a proportional distribution. For this analysis, the sample was allocated proportional to

electricity usage within each business type. For a given total sample size n , the number of sample points n_i in each stratum i were calculated as:

$$n_i = n \times \frac{\text{electricity usage}_i}{\sum_i \text{electricity usage}_i} \quad (\text{proportion to proxy variable})$$

F.2.5 Selection of the non-California comparison area

The following three principal choices were considered with respect to choosing a comparison area for this study:

- Pick a single comparison area, such as an individual state or utility service territory that is similar in most respects to the California market
- Pick a subset of the United States that has not had as much energy-efficiency program activity historically as has California
- Use the entire lower 48 United States with California subtracted

Each of the above approaches has strengths and weaknesses. We choose to use the entire United States (not including Alaska and Hawaii) because of the greater flexibility it offered (i.e., the other approaches can be explored as segments, albeit with smaller sample sizes, under the entire lower 48 U.S. approach). The tables below present the non-California population data:

Non-CA Estimated Energy Consumption

Sector	Estimated Energy (kWh)				Total
	Strata 1	Strata 2	Strata 3	Strata 4	
1. office	28,285,658,468	33,234,693,872	25,354,708,865	13,937,455,044	100,812,516,248
2. retail	50,654,706,727	80,777,888,274	51,711,337,901	4,504,441,134	187,648,374,035
3. institutional	18,754,243,989	76,103,180,814	81,975,655,287	61,312,749,902	238,145,829,993
4. other	81,262,620,335	100,747,431,495	65,004,415,257	31,664,535,760	278,679,002,847
5. high indust	25,166,640,239	140,457,208,693	331,764,095,477	215,479,888,487	712,867,832,897
6. low indust	24,958,612,117	101,777,598,712	189,970,797,325	91,834,157,594	408,541,165,748
Grand Total	229,082,481,875	533,098,001,861	745,781,010,112	418,733,227,920	1,926,694,721,768

Non-CA Facilities

Sector	Number of Facilities				Total
	Strata 1	Strata 2	Strata 3	Strata 4	
1. office	1,373,123	205,290	16,097	936	1,595,446
2. retail	1,459,247	334,154	24,875	232	1,818,508
3. institutional	508,435	213,189	37,633	2,798	762,055
4. other	2,689,984	432,936	31,004	1,403	3,155,327
5. high indust	44,129	23,539	6,286	447	74,401
6. low indust	1,029,812	236,302	32,380	1,614	1,300,108
Grand Total	7,104,730	1,445,410	148,275	7,430	8,705,845

F.2.6 Actual Samples Completed

The distribution of the actual samples completed by sector and size strata are shown for both markets in Table F-3.

Table F-3
Distribution of Completed Surveys

California Sample					
	Strata				
Sector	1	2	3	4	Total
Office	18	20	13	5	56
Retail	17	29	21	0	67
Institutional	7	26	29	31	93
Other	27	49	31	12	119
High Industrial	5	33	46	7	91
Low Industrial	7	28	41	13	89
<i>Total</i>	<i>81</i>	<i>185</i>	<i>181</i>	<i>68</i>	<i>515</i>
Non-California Sample					
	Strata				
Sector	1	2	3	4	Total
Office	16	18	10	5	49
Retail	22	33	18	2	75
Institutional	10	26	29	24	89
Other	38	44	28	13	123
High Industrial	5	30	43	4	82
Low Industrial	3	27	38	13	81
<i>Total</i>	<i>94</i>	<i>178</i>	<i>166</i>	<i>61</i>	<i>499</i>

F.2.7 Sample Weights

The non-California sample was drawn to mirror the California sample as closely as possible. We then weighted the non-California sector and strata cells the same way as the California cells so that comparisons could be made between the two markets without the need to adjust for differences in the distribution of business types and size strata between the two areas. We maintain the ability to weight the non-California sample up to the non-California population should we need to make any aggregate statements or analyses of the non-California market itself. Energy and establishment weights are constructed by dividing the total energy or number of establishments in any cell (combination of a sector and strata) and dividing by the number of sample points collected in that cell.

F.3 PARTICIPANT CUSTOMER SAMPLE

As discussed in Section 6 of this report, in-depth interviews were conducted with 39 of the 92 unique end users in the Program as of Fall 1998. The basic sampling approach for our surveys of participant end users was as follows. First, we segmented all of the customers into three size strata based on the size of the NSPC incentives accepted. Our goal was to take a census of the Top 10 customers in the first size stratum (Stratum 1). These Top 10 customers accounted for roughly 50% of the accepted incentives to date and all had incentives of over \$800,000. For the remaining 50% of accepted incentives, we split the sample into two groups, those with incentives less than \$300,000 and those with incentives between \$300,000 and \$800,000. Within the medium and small incentive strata, our goal was to take a random sample of 15 customers each. The actual sample that resulted and its relationship to the population of participants (again, as of Fall 1998) among the three groups is shown below in Table F-4. As shown in the table, the actual sample completed did achieve a census of the Top 10 customer projects, was well distributed among the three size strata, and captured 69 percent of the total participant population of incentives.

Table F-4
Stratification of Participant Customer Sample by Accepted Incentives (As of October 1998)

Strata	Definition	Sample		Population	
		n*	Incentives	N*	Incentives
Stratum 1	Top 10 customers, incentives (>\$800,000)	10	\$16,220,102	10	\$16,220,102
Stratum 2	Incentives > \$300,000 and <=\$800,000	11	\$5,282,966	24	\$10,473,541
Stratum 3	Incentives below \$300,000	18	\$1,832,485	58	\$7,125,810
	All Strata	39	\$23,335,553	92	\$33,819,453

- n, N = numbers of unique customers with at least one accepted application.

As shown in Table F-5, of the total sample of 39 participating customers, 54% sponsored their own applications while the remaining 46% used a third-party EESP as the project sponsor. These proportions are somewhat different from the proportions among all customer participants (see Section 9). This is because non-sponsors were more difficult to contact and were more inclined to either refuse the interview or defer scheduling beyond our deadlines for this report.

Table F-5
Breakdown of Customer Participant Sample by Sponsorship

Participant Type	Percent of	
	Sample	Sample
Used Third-Party EESP as Sponsor	18	46%
Self Sponsored	21	54%
Total	39	100%

Lastly, in Table F-6 we present the distribution of the customer sample by the utility for which applications were submitted. As can be seen, the sample is fairly well distributed across customers

with applications in each of the three utilities' programs. Note that two multi-site customers had applications accepted across two or more utilities.

Table F-6
Breakdown of Customer Participant Sample by Utility

Utility	Sample	Percent of Sample
PG&E	15	37%
SCE	16	39%
SDG&E	8	20%
PG&E/SCE/SDG&E	1	2%
SCE/SDG&E	1	2%
Total Unique Customers	39	100%

F.4 EESP SAMPLING APPROACH

In this subsection, we discuss the approach to developing the samples for the three sets of structured interviews we conducted with participant and non-participant energy-efficiency service providers (EESPs) during the course of this study. Two sets of interviews were conducted with participant EESPs, while non-participants were interviewed once. The two sets of participant interviews occurred at different points in the program implementation process. The first-round participant interviews were conducted in September and October of 1998. Re-interviews were then conducted with participant EESPs in early March 1999. The non-participant EESP interviews were conducted in February 1999.

F.4.1 First-Round, Participant EESP Interviews

The purpose of the first-round, participant EESP interviews was to obtain early information on a variety of topics important to both our process evaluation and the broader baseline study that is also a part of this project.

The sample plan for the first-round interviews was developed from program tracking data obtained from the utility administrators in mid-summer, 1998, which was before any changes had taken place in the status of wait-listed applicants for the PG&E and SCE programs. Therefore, our sample design targeted EESPs with projects that had been accepted for funding, as well as those on the wait list. The firms interviewed varied significantly in characteristics, including size of application, size and type of firm, number of applications, sponsors with projects that were funded versus wait-listed, and other characteristics. The sample was segmented based on type of EESP as shown in Table F-7 below. This table also shows that the actual sample completed covered a significant share (81%) of the accepted incentives for applications with third-party EESPs as the sponsor.

Table F-7
First-Round Sample Versus Population Characteristics of Participant EESPs
with Accepted Applications

	EESP Sample*			EESP Participant Population*			Sampled Incentives as % of Population
	n	Cust.	Accepted Incentives	N	Cust.	Accepted Incentives	
ESCO / Retail	3	4	\$5,882,650	3	4	\$5,882,650	100%
ESCO/Traditional	9	19	\$7,961,031	11	22	\$9,184,987	87%
Engineer/Contractor	5	12	\$2,323,568	12	20	\$4,979,866	47%
Totals	17	35	\$16,167,249	26	46	\$20,047,503	81%
Sampled EESPs with Wait List or cancelled applications	5						
Total Participant EESP Sample	22						

*n and N refer to the number of unique EESPs in the sample and program participant population, respectively. Cust refers to the number of unique customers associated with applications sponsored by EESPs.

The three subgroups in the table above were defined on an *a priori* basis, that is, before interviewing the firms and asking for them to classify themselves, as follows:

- ESCO/Retail: This group is defined to include firms that focus on electric commodity in addition to demand side services.
- ESCO/Traditional: This group includes companies generally considered traditional ESCOs, generally by their own definitions or those of other industry observers.³
- Contractors/Engineers: This category includes firms that would typically provide energy service provider services as an adjunct to other professional services. This group includes engineering design firms, contractors, and firms specializing in energy controls.

One objective of the participant EESP survey was to characterize the types of firms that have participated in the NSPC thus far, as well as the relative financial importance of the services that these firms provide. Participating EESPs were asked to categorize themselves into one of the subcategories discussed above. Table F-8 provides a summary of the self-classifications by primary business area.

³ We have generally followed the classification of traditional ESCOs presented by Dayton, et al., in "The Energy Services Company (ESCO) Industry: Analysis of Industry and Market Trends," 1998 ACEEE Summer Study, August.

Table F-8
Self-Classification of EESPs

EESP Type	Number Self-Classifying
Traditional ESCO	14
ESCO / Retail	3
Engineer/Contractor	5
Total	22

The self-classifications were generally similar to our original *a priori* classifications with a few exceptions. Most of the firms self-classified themselves as some type of ESCO (17 of 22 respondents including, in some cases, firms we had previously classified as engineering or controls firms).

Second-Round EESP Re-Interviews

To provide updated feedback on the experience of participants with the program, re-interviews were conducted with 14 of the 22 participants that had been interviewed earlier in the evaluation. These re-interviews were conducted in March 1999. The re-interviews included a variety of EESP applicants - large and small, ESCO and engineering firms, and applicants whose projects were at a variety of stages in the program.

F.4.2 Non-Participant EESP Interviews

Interviews were conducted to obtain input from a sample of firms that had not participated in the NSPC program in 1998 (non-participant EESPs). The primary objectives of this task were to (1) characterize the business activities and strategies of these firms for comparison with those firms that participated in the PY98 NSPC (Non-Residential Standard Performance Contract) program, and (2) understand why these firms were not involved with the PY98 program and assess the likelihood that these firms may participate in future years' solicitations.

There are few sources available that accurately describe the *current* population of EESPs and their various types, and their relative market shares. These points have been recently underscored in a study conducted by Easton Consultants and Feldman Management Consultants (EC&FMC, 1999) for the Energy Center of Wisconsin and the New York State Energy Research & Development Authority. In this study, the authors state: "Unfortunately there are no reliable estimates of the size of the competitive energy efficiency markets nationally, nor of the subset composed of services delivered by ESCOs." Said another way, there is no comprehensive and reliable population frame from which to draw a statistically representative sample of EESPs, or even more narrowly, traditional ESCOs. Thus, when we constructed the sample frame for non-participating EESPs (both California and non-California) for use in this study, we drew on the following sources:

- lists of registered ESPs from on the California PUC website,

- NAESCO membership directories,
- Dun & Bradstreet’s MarketPlace databases,
- a list of firms requesting to obtain request for proposals from the Federal Energy Management Program (FEMP), and
- a list of EESPs obtained from end users in our baseline survey who were asked to name EESPs of which they were aware on an unaided basis.

Using these data, we estimate that the number of traditional ESCOs and retail energy service providers (that provide efficiency services in addition to electric commodity) serving California to be in the range of 30 to 70, depending in large part on how one defines an ESCO. We are reasonably confident that this represents a good approximation of the population for ESCOs serving California since this range number is consistent with an estimate made by the California Energy Commission in 1998 that 58 companies in the state provide comprehensive performance contracting services

In total, interviews were completed with a sample of (17) firms, including a mix of in-state EESPs, out-of-state EESPs, in-state Mechanical Engineering and Contracting, and one firm that focuses primarily on financing (including financing other ESCOs). The scope of this effort was not to characterize in a statistical manner the entire market of non-participant EESPs. Rather, the approach taken was to interview representatives from a broad cross-section of non-participants and identify possible trends and issues within the marketplace that might provide input to complement the information obtained from customer surveys and interviews with participating EESPs. As noted above, and summarized in Table F-9 below, a wide variety of firms were contacted.

**Table F-9
Types of Non-Participant EESPs Contacted**

Type of Firm/Description of Firm	Number of Firms
<p>Traditional ESCO</p> <ul style="list-style-type: none"> -ESCO with consulting, financing, and broad environmental capabilities, specializing in non-residential energy efficiency services. -Large, full-service ESCO -Total energy management firm with ESCO roots (treated as an ESCO in the discussions below). -ESCO serving the non-residential sector with power quality, O&M, and HVAC service expertise. -ESCO serving the residential and non-residential sectors with consulting, O&M, submetering, and lighting services to customers and other ESCOs -East-coast based traditional ESCO, with regional operations throughout the US (not presently active in California). 	<p>6</p>

Table F-9 (continued)
Types of Non-Participant EESPs Contacted

Type of Firm/Description of Firm	Number of Firms
<p>RESCO</p> <ul style="list-style-type: none"> -RESCO with a practice covering clients nationwide and in Canada -East-coast based retail energy service provider (providing commodity and efficiency) -East-coast based retail energy provider (mostly providing commodity-only, with some services out-sourced to local firms). -Non-California retail energy service provider (providing commodity, efficiency, and information services). -Full service RESCO operating across the State 	5
<p>A&E</p> <ul style="list-style-type: none"> -A&E firm specializing in non-residential planning, consulting, power quality, performance contracting, and engineering design work -Engineering firm with expertise in co-generation, substation design, power plant design, petroleum-extraction, and refining -HVAC engineering firm with energy efficiency practice primarily engaged in R&D activities -Engineering firm providing energy analysis and design services to city, state, and local government and institutional clients 	4
<p>Other</p> <ul style="list-style-type: none"> -Financial services firm, financing conservation and renewables -Non-residential HVAC contractor serving a region of the State, providing engineering consulting, O&M, performance contracting, building monitoring, and other services 	2

F.5 CUSTOMER-LEVEL FREE-RIDERSHIP DATA COLLECTION AND ANALYSIS

Free-ridership refers to participating customers who received incentives even though they would have implemented an efficiency measure without the incentives; hence, they are getting a “free ride” on the incentive program. In the context of the terminology used here for net savings calculations, a participant may be called a “free rider” if that participant implements a measure that that he/she would have implemented in the absence of the program.

In some cases, the NSPC Program motivated customers to replace equipment prior to the end of its useful life. This will be referred to as an “early replacement” action. Situations in which early replacement is potentially an issue with respect to free-ridership were carefully examined. In other cases, the Program motivated the customer to select more efficient equipment when replacing equipment that has reached the end of its useful life. This will be referred to as a “normal replacement” action. The Program may also have motivated the customer to add new efficient equipment or add new controls to existing equipment. This will be referred to as a “new equipment” action.

For each customer, there may be one or more than one application. The one decision-maker

responsible for each customer's application(s) was interviewed regarding the influence of the Program on their decision to install the energy efficient equipment. The survey obtained highly structured responses concerning the probability that the customer would have installed the same energy efficient measure(s) in the absence of the NSPC Program. Appendix E, Section E.2 contains a copy of the instrument employed.

F.5.1 Net-to-Gross Ratio (NTGR) Framework

The net-to-gross ratio (NTGR) was calculated using responses from the person involved in the decision to install the efficient equipment. This method, referred to as the self-report NTGR, is fairly common in situations where a comparison group is not available for inclusion in a billing analysis (an alternate way of addressing net-to-gross). The free-ridership analysis draws on answers to questions PD6a, PD7a for non-sponsors and to questions PD10 and PD11 for sponsors on the survey instrument, these questions are shown in Table F-10. The answers to each of the two questions asked of sponsors and non-sponsors, yielded two estimates of the NTGR. Note that the values for questions PD7a and PD11 were first transposed so that their large values have the same meaning as the large values of the other questions. Next, since questions PD7, PD10, and PD11 were measured along a four point scale, they had to be transformed into a 10-point scale.

Next, the issue of *deferred* free-ridership was considered. Deferred free-riders are customers who, in the absence of the program, would have *eventually* installed exactly the same equipment that was installed through the program. That is, the Program *accelerated* the installation of the equipment. To address this issue, two questions were asked of the sponsors and non-sponsors. Non-sponsors were asked questions PD9b and PD9c while sponsors were asked questions PD13 and PD14 (see Table F-11). PD9b and PD14 both asked whether, in the absence of the Program, whether the customer would have installed the energy efficient equipment at about the same time as currently planned or at a later date. Using the forecast conversion information in Table F-12, their answers to these questions were then translated in a third implied NTGR. For example, if, in answer to either question PD9b or PD14, the respondent said "at the same time to less than a year," a third estimate of the NTGR of .063 was assigned. If they said "over 1 year later" they were then asked in questions PD9c or PD14a how many years later. Their answers were then translated into the third estimate of the NTGR. The first two estimates of the NTGR based on PD6a and PD7a or PD10 and PD11 were then averaged with this third estimate of the NTGR to produce the final NTGR.

Table F-10
Initial Free-Ridership Questions

Non-Sponsors

PD 6 On a scale from 0 to 10, where 0 is completely insignificant and 10 is extremely significant, please rate the significance of each of the following with respect to how important they were in your decision to install the **Energy Efficient Equipment?** Let me read you all of the factors first and then we'll go over your rating of each of them...

PD6a. The NSPC program incentives to be paid to **SPONSOR** based on the actual savings demonstrated?

0 1 2 3 4 5 6 7 8 9 10

11 Don't Know

12 Refused

PD7a. Without the NSPC program, including both the incentive **and** the services provided by **SPONSOR**, how likely is it you would have installed the Energy Efficient Equipment? Would you say it was ...

- | | |
|---------------------------------------|---------------|
| 1 Definitely would NOT have installed | SKIP TO PD 9a |
| 2 Probably would NOT have installed | SKIP TO PD 9a |
| 3 Probably would have installed | |
| 4 Definitely would have installed | |
| 9 DON'T KNOW / REFUSED | |

Sponsors

PD 10 How significant was the NSPC program incentive in influencing your decision to install the **Energy Efficient Equipment?** Would you say . . .

- 1 Insignificant
- 2 Somewhat Significant
- 3 Very Significant
- 4 Extremely Significant
- 9 DON'T KNOW / REFUSED

PD 11 If the NSPC incentive had not been available, how likely is it you would have installed the **Energy Efficient Equipment?** Would you say . . .

- | | |
|---------------------------------------|--------------|
| 1 Definitely would NOT have installed | SKIP TO PD13 |
| 2 Probably would NOT have installed | SKIP TO PD13 |
| 3 Probably would have installed | ASK PD12 |
| 4 Definitely would have installed | ASK PD12 |
| 9 DON'T KNOW / REFUSED | ASK PD12 |

**Table F-11
Deferred Free-ridership Questions**

Non-Sponsors

PD 9b And then without the NSPC program, including both the incentive **and** services provided by **SPONSOR**, would you have installed the **Energy Efficient Equipment** at about the same time as currently planned or at a later date?

[IF AT A LATER DATE, PROBE: "Would that be less than 1 year later, or over 1 year later?", AND SELECT APPROPRIATE RESPONSE. If over 1 year later, probe for best estimate of how many years later.]

- 1 Same Time To Less Than 1 Year
- 2 Over 1 Year Later PD9c. Approximately how many years later? _____
- 9 DON'T KNOW / REFUSED

Sponsors

PD 14 And if the NSPC incentive had not been available, would you have installed the **Energy Efficient Equipment** at about the same time as currently planned or at a later date?

[IF AT A LATER DATE, PROBE: "Would that be less than 1 year later, or over 1 year later?", AND SELECT APPROPRIATE RESPONSE. If over 1 year later, probe for best estimate of how many years later.]

- 1 Same Time To Less Than 1 Year
- 2 Over 1 Year Later ➔PD14a. Approximately how many years later? _____
- 9 DON'T KNOW / REFUSED

**Table F-12
Forecast Conversion**

Forecasted Installation of Same Equipment	Implied NTGR
At the same to less than one year	.063
1 to 2 years	.25
2 to 3 years	.5
3 to 4 years	.75
4 or more years	1.0

F.5.2 Weights

So that the overall, program-level NTGR reflected the magnitude of each customer's application(s), a weighting scheme was developed. Since there was greater confidence in the *incentives paid* to each customer than in the estimates of a customer's kWh savings or kW demand reduction (since savings will not be measured until one-year after project installation), the size of the incentives was used for weighting. The unweighted NTGRs were first calculated using the approach described above. Next, the unweighted NTGRs were weighted appropriately.

For each customer, two weights were calculated. The first weight was simply each sampled customer's incentive in a given stratum⁴ divided by the total incentive for all sampled customers in the same stratum. This weight reflects each customer's contribution to the NTGR calculation for stratum in which they reside. The second weight is the total incentive for the population of customers in the same stratum divided by the incentives in the total population across all strata. This second weight reflects the contribution to the NTGR calculation of the population within each stratum. For each of the 39 customers, these two weights were first multiplied together and then multiplied by the unweighted NTGR. Finally, the customer-level weighted NTGR was then summed across customers to produce the final weighted, Program-level NTGR. Equation 1 describes these calculations.

$$NTGR_w = \sum_{i=1}^n \frac{\text{incent}_{i,h}}{\text{totincent}_h} \times \frac{\text{Totincent}_h}{\text{Totincent}_t} \times NTGR_{u,i,h} \quad \text{Eq. 1}$$

where

$NTGR_w$ = The overall weighted net-to-gross ratio

$NTGR_{u,i,h}$ = The unweighted net-to-gross ratio for the i^{th} sampled customer in the h^{th} stratum

$\text{incent}_{i,h}$ = The incentive paid to the i^{th} sampled customer in h^{th} stratum

totincent_h = The total incentives paid to all sampled customers in the h^{th} stratum

Totincent_h = The total incentives paid to the population of all customers in the h^{th} stratum

Totincent_t = The total incentives paid to the population of all customers

⁴ See Section H.3 for a description of the three strata.