California's Small Business Standard Performance Contract Program, The First Year

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ABSTRACT

California's Small Business Standard Performance Contract Program provides small and medium size customers of the state's investor-owned electric or electric and gas utilities with the opportunity to participate in a standard offer, pay-for-performance energy efficiency incentive program[1].

The program requires that a third party energy efficiency service provider (or Project Sponsor) complete a set of applications that describes the energy efficiency measures (EEM) and estimates energy savings. After installation, the Project Sponsor is responsible for measuring and reporting the actual amount of energy saved. The incentive amount is dependent on the type of energy efficient equipment installed and the amount of energy saved.

For the most frequently installed EEMs, pre-approved savings calculation tools and measurement protocols are provided, with the intent of reducing the cost and complexity of participating in the program. Common measures included project involving lighting replacement, HVAC replacement, variable speed drives, boiler replacement, high efficiency motors, air compressors and injection molders.

In 1999, nearly 200 applications were received by the three utilities representing potential annual energy savings of 19.5 million kilowatt-hours. The estimated incentive pay out for these savings is $1,928,000[2]. The most significant barriers identified during the first year of the program are the lack of awareness of the program in the smaller non-residential market and a perception by potential service providers that the program forms and measurement procedures are too complicated, making it uneconomical to participate.

Several changes to the program design are being implemented in 2000 that are intended to further simplify participation in the program. These improvements include a stipulated savings approach for certain measures, optional measurement protocols and simplified application forms. In addition, the normal application process is being streamlined with the introduction of a self-contained software program that integrates all of the necessary forms into one easy to use application.

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[1] This program is funded by California utility customers and is administered by Pacific Gas and Electric Company, San Diego Gas & Electric and Southern California Edison, the state's investor owned utilities, under the auspices of the California Public Utilities Commission.

[2] Final incentive amounts are dependent on measured and verified savings and will not therefore be known until the end of a year of operation.

Introduction

In 1998, California's three investor owned utilities (IOU) introduced a performance-based incentive program, the Standard Performance Contract (SPC) Program. The program was intended to promote energy efficiency in the commercial and industrial sectors and to transform the energy efficiency market, by empowering third-party energy efficiency service provides to be the primary source of energy efficiency information and incentives rather than the local utility. Performance based contracts are intended to educate the customer of the economic benefits of energy efficiency. Through performance contracts, they are made aware of exactly how much energy is being saved and associated utility bill reductions. These lessons are reiterated with the measurements of the actual savings, transforming number on paper to actual measured savings.

One of the conclusions of the first year program evaluation was that the SPC was not adequately serving small and medium commercial and industrial segments. In 1999, a new program targeting small and medium businesses the Small Business SPC (SBSPC), was developed. The SBSPC was designed to reduce the administrative requirements while maintaining the benefits of a performance based incentive program One of the primary objectives of the SBSPC program is to encourage small and medium business to work with Project Sponsors and other contractors to install energy efficiency equipment. For this reason, customers are not allowed to participate directly in the SBSPC program. The reduced paperwork and increased incentives were intended to attract the Project Sponsors who were reluctant to work with this market segment as part of the Large SPC program.

This paper will describe the design of the SBSPC program, the results of the program's first year of operation.

Program Design

Overall Design Objective

The three investor-owned utilities contracted with Alternative Energy Systems Consulting, Inc. (AESC) to develop an SPC program targeting small and medium market segment. The program was designed to be similar to the existing SPC program since many of the potential Project Sponsors were already familiar with the application process of the larger program. The goal of the new program was to simplify the application process relative to the 98 SPC program by: a) reducing the data input requirements, b) provide easy to use energy savings estimating tools, and c) relaxing the measurement and verification (M&V) requirements. As with the large SPC program, all of the forms and project requirements are consistent on a statewide basis, that is among all three utility administrators.

Customer Eligibility

The program is offered to commercial, industrial and agricultural customers with facilities serviced by one of the utility administrators and whose peak demand is less than 500 kW.

Project Sponsor Eligibility

Another program objective was to foster and promote business relationships between small customers and energy service providers. The theory is that these relationships will ultimately transform the energy efficiency marketplace and eventually eliminate the need for incentives. Therefore, customers that choose to participate must do so via a third party Project Sponsor.

Incentive Rates

The typical energy efficiency project for small and medium size business is smaller than that for larger companies. As such, the cost for small businesses to participate in SPC programs tends to be a higher percentage of the incentive amount, which reduces program participation. To offset this difference, the utility administrators have increased the energy savings incentive rates as well as provide a one-time participation incentive for first time Project Sponsors and Customers. The incentive amount is based on the type of measure and the energy savings for a one-year period. The participation incentive increases the size of the incentive for small projects and helps cover the cost of learning how to prepare the forms and fulfill the M&V requirements. The incentive rates and participation incentives for the 1999 SBSPC Program are shown in Table 1.

Table 1. 1999 SBSPC Incentive Rates and Participation Incentives

Measures/Technologies	Incentive Rates (¢ per kWh saved)	Participation Incentive (One time payment)
Lighting	5.5 ¢ per kWh	$1,000
Air-conditioning & refrigeration	18.5 ¢ per kWh	$2,500
Motors/other	9.0 ¢ per kWh	$1,500
Gas*	34.0 ¢ per therm	$1,500

The incentives are paid in two payments. After the equipment has been installed, the Project Sponsor receives 40% of the anticipated incentive amount and participation incentive, if applicable. After one year of operation, the actual savings are determined and the project Sponsor receives the balance of incentive, after adjustments for changes in the measured energy savings.

Incentive Limits

The Program limits the amount of incentives that a customer can receive for a specific site ($40,000) and for all of their California facilities. The statewide limit ($1.5 million) includes incentives from both the SBSPC and large SPC Programs. A Project Sponsor is limited to 25% of the SBSPC incentive budget within each Utility Administrator's service territory. If the Project Sponsor is affiliated with the Utility Administrator, they are limited to 15% of the SBSPC incentive budget within that Utility Administrator's service territory.

Eligible Energy Efficiency Measures

The SBSPC Program promotes both electric and gas energy efficient measures (EEMs). These measures have been broken down into four categories including, lighting, HVAC, other electrical, and gas. Almost any measure that can be shown to save energy are eligible for this program. Exceptions include 1) technologies with measure lives less than three years, 2) measures with efficiencies below Federal or State minimum standards, 3) devices that can be installed/removed without the use of a tool, 4) fuel switching, self generation or cogeneration, 5) maintenance or operational changes and LED exit signs.

To assist the Project Sponsors a set of "Common Measures" have been prepared for this program. These are energy efficiency measures that are often installed by small to medium businesses and represent the majority of projects installed in past incentive programs. For each "Common" measure, an abbreviated set of forms/spreadsheets for estimating energy savings, and describing M&V procedures were developed to assist the applicant in completing the necessary documentation. These prescribed methods enable a Project Sponsor to complete the necessary forms quickly and efficiently. "Common" measures are as follows:

- **Lighting Measures**
  - Lamp & Ballast Replacement
  - Delamping
  - Occupancy Sensors
- **HVAC Cooling Units**
  - Air & Water Cooled Packaged Units
  - Air & Water Cooled Chillers
- **HVAC Variable Speed Drive Fans**
  - VSD Fans (weather dependent)
- **Variable Speed Drives**
  - Process Fans
  - Process Pumps
  - Direct Drive Applications
- **High Efficiency Motors**
  - Three Phase A/C Motors
- **High Efficiency Injection Molding Machines**
  - Variable Speed Retrofits
  - Variable Volume Machines
  - All Electric Machines
- **High Efficiency Boilers**
  - Process Boiler Replacement
  - HVAC Boiler Replacement
- **Compressed Air Systems**
  - Reciprocating Compressor
  - Rotary Screw Compressor

Application Process

The SBSPC Program application process includes four submittals (see Figure 1) that include the Basic Project Application (BPA), Detailed Project Application (DPA), Project Installation Report (PIR) and Annual Savings Report (ASR). These same submittals are used in the large SPC, except that two ASRs are required to cover the longer two-year monitoring period of the larger program. SBSPC Program forms are completed using Excel workbooks supplied to program participants by the Utility Administrators via web sites or floppy disks.

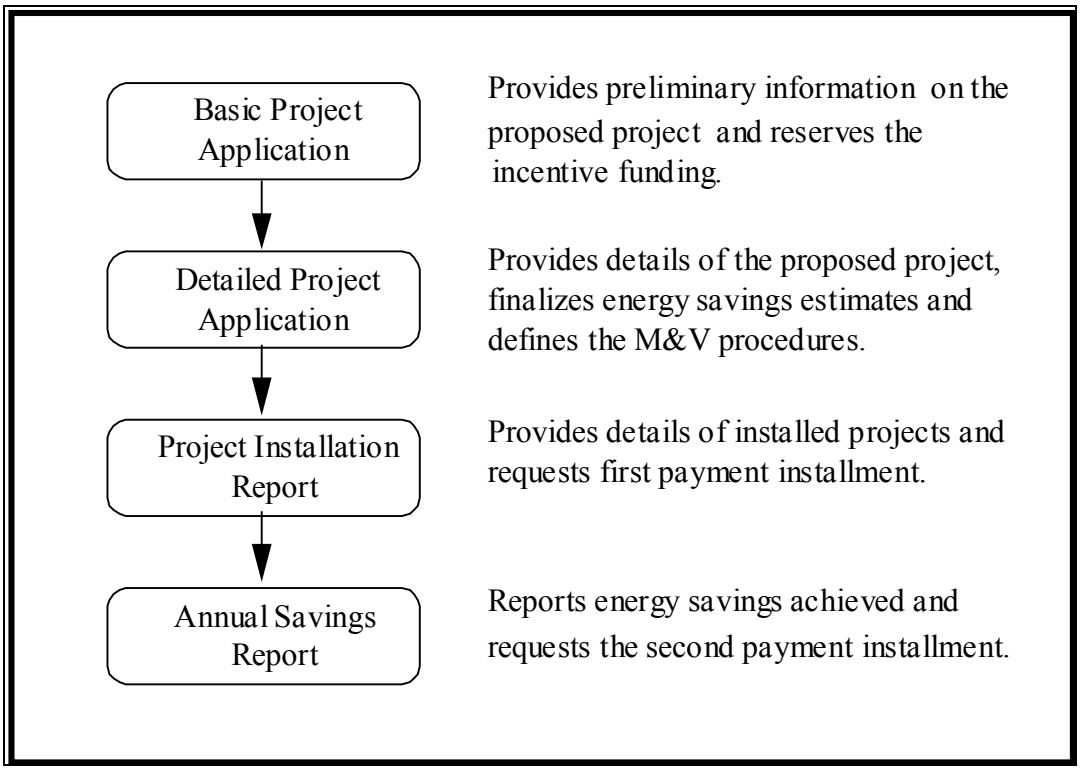

Figure 1. Application Process for the SBSPC Program

The Project Sponsor uses Excel workbooks to complete all of the necessary forms, which are submitted in both electronic and hardcopy forms to the Utility Administrator.

Basic Project Application (BPA)

The BPA is used to request that the Utility Administrator reserve incentive funds for a project that involves installing EEMs within their service territory. The Project Sponsor provides information on the customer(s), site(s) and the proposed measure(s). Preliminary energy savings estimates for the proposed measures are included in the BPA. The Project Sponsor has the Customer sign a Site Control Letter that authorizes to submit an SBSPC application on their behalf.

Detailed Project Application (DPA)

The DPA represents the Project Sponsor's detailed proposal for implementing an energy efficiency project under the SBSPC Program. The DPA contains a detailed equipment survey of the existing and proposed equipment that includes nameplate data, equipment location, and operation information. The customer signs a Project Affidavit stating that he has been informed of the estimated energy savings and incentive amount to be paid the Project Sponsor. After approval of the DPA, the Utility Administrator issues a SBSPC Agreement. The SBSPC Agreement is a contract between the Project Sponsor and the Utility Administrator that specifies the energy-efficiency measures to be installed, the

expected total energy savings, the expected total incentive payment, and the approved M&V plan. At the time the contract is submitted, the Project Sponsor is required to submit a deposit for 2.5% of the anticipated incentive amount. This deposit is intended to ensure that the proposed project will be completed and the energy savings realized.

Project Installation Report (PIR)

The PIR is a detailed description of the installed energy efficiency measure(s) at each Host Site(s) as set forth in the SBSPC Agreement. The core of the PIR is a detailed narrative of the installed measure, which includes nameplate data, performance parameters and operation data (e.g., hours of operation and schedule).

Annual Savings Report (ASR)

In the Annual Savings Report (ASR) the Project Sponsor presents the one-year verified energy savings that resulted from the installation of energy efficient measures at the Customer site(s). The ASR describes the measurement and verification data used in calculating the energy savings. The ASR documents actual savings and verifies that the energy efficiency measures are operating as per the SBSPC Agreement.

Energy Savings Estimates

The incentive amount that a Project Sponsor receives is based on the estimated energy savings of the measure, which are subsequently verified through the M&V activities. SBSPC energy savings are the difference between what standard efficiency equipment (baseline usage) would have used minus what the new, high efficiency equipment (post installation) uses. Standard efficiency equipment refers to equipment that meets either State/Federal efficiency requirements or current industry practice. The challenge in estimating savings is to identify and quantify the critical performance and usage parameters related to a measure.

For Common EEMs, energy savings are calculated using Excel workbooks/ spreadsheets provided by the SBSPC Program. Use of these spreadsheets is required in order to utilize the abbreviated forms associated with the Common EEM approach. The Project Sponsor may use alternate approaches provided the Utility Administrator is able to verify the accuracy of the estimate using the documentation provided by the Project Sponsor. This includes publicly available energy saving estimate tools and software.

M&V Approach

M&V Procedures define the requirements for quantifying the gross energy savings resulting from the installation of an EEM. A project-specific M&V plan must demonstrate that metering and analysis will be done in a consistent and logical manner and with a level of accuracy acceptable to all parties. The project-specific M&V plan must be submitted by the Project Sponsor as part of the DPA submittal and approved by the Utility Administrator prior to the commencement of any M&V activities. The preferred M&V approach for the SBSPC Program involves stipulation of equipment operating loads/profiles using equipment

specifications and/or spot measurements and then verifying operating hours with run-time meters. Equipment loads and operating hours are estimated in the energy savings calculations and verified as part of the M&V task.

Project Sponsors begin their sampling analyses by categorizing the measure equipment according to application (identical operating characteristics) and/or by expected operating hours. Examples of application categories include HVAC equipment or constant load motors on a production line. Each application group will be defined and supported with descriptions of their operating modes and with other backup materials. For instance, a lighting measure for a large office building might be divided into six different usage groups, consisting of private offices, shared offices, hallways, 24 hour lighting, rest rooms and common areas. Operating hours for each usage group should be reasonable and based upon interviews with Customer Site personnel, observation of site conditions, and typical operating hours estimates for the equipment.

For each application or usage group in the Project, there must be at least one piece of equipment subject to load verification and run-time metering. Sampling to verify equipment operating hours (loaded) must meet a confidence and precision level of 80/20 for the Customer Site as a whole and for each usage group. The Utility Administrator may conduct inspections after submittal of the DPA, PIR and ASR to confirm the information provided by the Project Sponsor.

1999 Program Results

The SBSPC program was rolled out on April 1, 1999 by the three Utility Administrators. All of the forms and manuals were posted on the utility SPC Webster and were available for down loading. Initially, there was limited response to the program. Many of the potential Project Sponsors were reluctant to try the new program due to the stories that they had heard about the paper work and M&V requirements of the large SPC program. The Utility Administrators worked to promote the new program and inform the Project Sponsors about the simplicity of the new program. Brochures explaining the program were distributed, training classes were conducted and one-on-one meetings were held to assist Project Sponsors with the new program. The utility field personnel contacted customers and provided them with information on the programs. By summer, the level of participation began to grow and the number of applications increased. In July, minor changes were made to the program including elimination of the application fee, minor corrections to the Procedure Manual and the addition of several new Common measures.

The utilities continued to promote the program and the participation continued to increase. A total of 172 applications were filed with the three utilities that include annual energy savings of 19.5 million kilowatt-hours. A breakdown of these savings by measure type is shown in Table 3.

Table 3. 1999 SBSPC Program Energy Savings Results

Measure Type	Proposed Savings (kWh)	Incentive ($)
Lighting	7,449,693	$421,971
HVAC	2,713,972	$581,443
Other	8,899,559	$902,961
Gas*	424,849 (42,485 Therms)	$21,945
Totals	19,488,073	$1,928,320

*Therms converted to kWh using 1 therm is equivalent to 10 kWh

Discussion of Results

The SBSPC program was able to reach a number of small businesses with incentives for energy efficiency. Approximately 80 different Project Sponsors participated in the program. Many of these Project Sponsors were new to the SPC program and have expressed an interest in participating with additional projects.

Lighting accounted for approximately 38% of the total energy saved. Early in the year, there was less interest in the lighting measures as customers could participate in another incentive program with less rigorous requirements called the Express Efficiency program. Later in the year, funds for this program were depleted and interest increased in the SBSPC program.

HVAC measures accounted for 14% of the total energy savings. Most of these projects involved replacement of packaged HVAC units, although there were some savings associated with refrigerated case anti-sweat heater upgrades included in this category.

The "Other" measure category was dominated by the replacement of dairy vacuum pumps with higher efficiency pumps and variable speed drive controls. This type of measure was extremely popular and accounted for approximately 75 applications. Besides the dairy vacuum pumps, there were several projects involving motor controls and high efficiency injection molding machines. Other measures accounted for 46% of the energy savings.

There were only a few gas projects that were part of the SBSPC program. These accounted for 2% of the energy savings.

Program Barriers

During the year, there were several barriers identified and the utilities tried to address them. The first barrier is that most small and medium size customers are unaware of the program and are being informed about the program by their service providers. In many cases the service providers are either unaware of the programs or believe the program is not intended for their customers. The second barrier is the misconception that the program is just like the large SPC and that it is too costly to participate. The utilities have assisted a number of customers with their first application who subsequently submitted additional applications. After the initial applications, several project sponsors stated that the process is much improved and are willing to submit additional applications. The utilities are continuing to

simplify the application process and streamline the M&V requirements. Convincing Project Sponsors to participate has been the most significant barrier to the program's success.

The third barrier is overlapping incentive programs. There are several other utility incentive programs that target small business customers. The Efficiency Express program drew many of the potential lighting projects away from the SBSPC program. Although in many cases, the incentive amounts would have been higher using the SBSPC program, customers chose to use the simpler and less rigorous Express Efficiency program rather than deal with the perceived problems of the SBSPC program. The utilities dealt with this barrier in various ways. One utility limited the amount of incentive that a customer could receive from the Express Efficiency Program, forcing them to use the SBSPC for additional incentives for lighting. There was a similar situation with one of the utility's Agricultural Rebate Program. The dairy vacuum pump retrofit measure was eligible in both the AG Rebate program (at a lower incentive level) and the SBSPC program. In this case, many of the customers believed that the higher incentive available through the SBSPC was worth the extra work and participated in the SBSPC program. The utilities are trying to clearly define the 2000 programs and minimize problems related to overlapping eligibility.

The final significant barrier pertains to the application workbooks/spreadsheets. Many of the Project Sponsors had difficulties with the various Excel worksheets due mainly to wide variation in computer skills and versions of Excel software that were in use. People had difficulty loading the worksheets with older versions of Excel. Even though the workbooks/spreadsheets were compatible with earlier versions of Excel, there still many problems, often times related to hardware limitations such as available RAM. Generally, these problems could be solved, but they greatly added to the frustration of the Project Sponsors and their acceptance of the SBSPC program.

Year 2000 Program

The utility administrators are implementing a number of changes to the 2000 program that attempt to eliminate the identified barriers. There have been several changes in the program requirements designed to further simplify the application process and reduce the cost of preparing applications. The project installation deposit has been eliminated and the minimum project size has been reduced 10,000 kWh per year. By lower the minimum project size, customers with small projects will be able to participate in the program. A new approach has been added to simplify the application process for the most popular measures. This process is called the "Calculated Savings Approach". In this approach, energy savings are determined from printed tables using prescribed operating parameters. The forms are simpler and can be filled out by hand. The parameters used to calculate savings have been stipulated by the utility administrators and include such variables as operating hours and equipment energy usage. The Project Sponsor is not required to perform any M&V activities, but is still subject to site inspections by the utility administrator. The incentive rates are reduced for projects using this simplified approach to reflect the lower effort required to participate in the program.

The second significant change to the program is that the process used to complete the application forms for the program is being revised. The forms will no longer be a part of an Excel spreadsheet, but rather be prepared using a Visual Basic based program. The Project

Sponsor will use the software application to enter the information on measures by answering a series of questions. The software will check that all of the necessary information has been supplied and then print out the completed forms. On-line help will be readily available to the user and the software will run on any Windows-based machine, without any special software program requirements.

Conclusions

The SBSPC program has provided California's third party energy efficiency providers and small businesses with an opportunity to participate in a SPC type program. They earn significant incentives while reducing energy costs. This segment of customers has been larger ignored by the previous SPC programs. Although the amount of energy savings is low, relative to the typical SPC project in the Large SPC program, they represent significant savings for many of the small businesses involved in the program. This segment is difficult to reach as they typically need all available capital for growing their business and energy costs are not a significant factor in their businesses.

Based on the experienced of the 1999 SBSPC program, the 2000 program has been modified to simplify the application process and increase participation.

Applications were received that represent a potential of 19,500,000 kilowatt–hours of energy savings. More importantly the program reached approximately 250 small businesses and has introduced the concept of energy efficiency to customers that would not otherwise have participated. It is hoped that these businesses will be more aware of energy efficiency in the future and will consider energy impacts in future projects.

References

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