

The Evolution of a Successful Efficiency Program: Energy Savings Bid

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ABSTRACT

San Diego Gas and Electric's Energy Savings Bid Program is a highly successful commercial energy-efficiency incentive program. Designed to be highly flexible, the program allows project sponsors to propose projects and incentive levels, covering up to 100 percent of the equipment cost of the efficiency measures. The program has a minimum savings per project of 500,000 kWh or 25,000 therms. Sponsors, who can be either customers or vendors (contractors or energy services companies), can aggregate smaller projects to meet the minimum savings threshold.

When the program was introduced, SDG&E issued requests for proposals (RFPs) soliciting "bids" for efficiency projects. This approach proved to be cumbersome for potential participants, both because of the unconventional structure and the short time period for responding to the RFP. The program found its stride when it was redesigned to have a more conventional application process. Over the last four years, other changes have been made to the program and its processes to make the program more successful. This paper documents the evolution of the Energy Savings Bid program from its rocky start to its current success.

Introduction

San Diego Gas and Electric's (SDG&E) Energy Savings Bid (ESB) Program is the single largest program in SDG&E's non-residential efficiency portfolio. Launched in 2004, the program got off to a rocky start. Originally envisioned as a competitive bidding process with formal requests for proposals (RFPs), the approach was not a hit with customers and vendors. This paper describes the evolution of the ESB program from its "bid" origins to the successful program it is today.

We draw on the results of two recent studies: an impact evaluation of the 2004-2005 ESB Program (KEMA 2008a) and a process evaluation of all of SDG&E's nonresidential programs, including ESB (KEMA 2008b). These studies included in-depth interviews with both project sponsors and customers participating through a sponsor.

The paper is organized as follows: First, a brief description of the program is provided, focusing on program elements that have been constant throughout other program changes. A chronology of program changes is then provided and the impacts of each change are discussed, followed by a summary of key program changes. Program metrics are presented for the different program periods. We then discuss the changing composition of the program in term of the types of participants and the types of projects being completed.

An Introduction to the Energy Savings Bid Program

Most of the key elements of the ESB program have remained constant over the four years of the program. The program provides incentives for energy-efficient retrofits or replacements of existing equipment at non-residential customer sites. To qualify, a project must save at least

500,000 kWh or 25,000 therms per year.

Each project has a project sponsor, which is responsible for program paperwork and collects the incentive. Customers may act as their own sponsor, or may participate through an energy efficiency service provider (EESP), such as a contractor or energy services company (ESCO). Typically, only large customers can meet the energy savings requirement on their own. Large companies are also more likely to have the engineering knowledge to develop and execute an energy efficiency project, as well as the experience to handle the program paperwork.

The program is not limited to large customers, however. ESB allows project sponsors to aggregate multiple sites and multiple customers into a single project. EESPs participating in the program may choose to put together a project with 1, 2, 5 or 100 different customers of any size.

The program is flexible in other ways as well. The project sponsor proposes a project, possibly consisting of multiple customers, sites and measures, and desired incentives. Projects may include new and innovative technologies or may be very complex involving multiple integrated measures. Any measure offering energy savings is eligible for consideration, as long as the measure life is at least 5 years.

Each project is subject to measurement and verification (M&V). The incentive paid is based on verified savings, which may be lower than the expected savings in the original application. If the final incentive is less than payments-to-date, the project sponsor will be required to reimburse SDG&E for the overpayment.

History of the Program

Although many program elements were in place at the inception of the program, it took some time and a number of program revisions for ESB to find its stride. The following sections look at the changes to the program chronologically, focusing on three distinct program periods: the original program (first half of 2004), mid-2004 through 2005, and 2006 to 2008.

The Original Program

The ESB program was introduced in 2004. Then known as “Customer Energy Savings Bid,” or CESB, the program was initially designed as an RFP process soliciting proposals for energy efficiency projects. The RFP process was designed to produce cost savings by having potential project sponsors compete against each other to have their proposals accepted. Since the bidder proposes both the project and incentive level, it was expected that SDG&E’s cost of purchasing energy savings would be reduced.

SDG&E distributed an RFP soliciting bids from large customers and EESPs for energy efficiency projects, and bidding closed after eight weeks. In each proposal, the bidder provided a technical description of the project, savings calculations, and a measurement and verification (M&V) plan. SDG&E evaluated proposals based on (1) Organizational capabilities of the bidder (10 percent), (2) Technical requirements (70 percent), and (3) Costs (20 percent).

The program would pay incentives up to 70 percent of equipment material cost. The schedule of payments was 30 percent on delivery of materials to site, 30 percent on post-inspection, 20 percent on M&V, and 20 percent on final submittals and completion of all tasks.

The proposal process was time-consuming and complex, and as a result, the first RFP did not produce a large number of bids. The anticipated cost competition did not emerge, as the bidders treated the program much like other large non-residential incentive programs. Without

those savings, the program could not justify the cumbersome RFP process.

A second RFP was issued in the same vein as the first, but by phase 3, changes were in the works.

Phase 3 through 2005

In August of 2004, SDG&E published a policy manual for the program (SDG&E 2004). The information in the manual marks a shift from an RFP-based approach to an application-based approach. Application forms were standardized, including a detailed project description spreadsheet, an incentive/total resource cost summary spreadsheet, and a customer affidavit. Applications would now be evaluated continuously on a first-come, first-served basis rather than waiting to announce the winners from a batch of submissions. The open period for phase 3 of the program was increased from 8 weeks to 3 months, with three open periods planned in 2005, covering most of the year. These changes significantly simplified the application process, both in terms of paperwork and timing.

SDG&E made another change that greatly simplified participation when it contracted with an independent third party for M&V services. Participants no longer had to develop and execute their own M&V plan, steps that were outside the experience of many potential participants. Sponsors still have the option of performing their own M&V, as long as SDG&E approves their M&V plan.

The policy manual also clearly lays out guidelines for incentives. While project sponsors were free to propose any incentive level they wished, the maximum recommended rebate levels were set at 7 cents per annual kWh saved for lighting, 20 cents per kWh for AC and refrigeration, and 10 cents per kWh for other projects, up to 70 percent of measure costs. Higher incentive levels could be proposed, but the sponsor would need to justify their request. In contrast, SDG&E's Standard Performance Contract (SPC) Program, which in many ways is a similar program, limits incentives to 5 cents per kWh for lighting, 14 cents for AC and refrigeration, and 8 cents for motors, up to 50 percent of project costs.

In late 2004, KEMA conducted a process evaluation of the ESB program (Larkin, 2004), which generated a number of recommendations. Two key recommendations, streamlining the application process and striving for consistent program offering, were already beginning to be addressed by the program with the phase 3 changes. Additional recommendation included:

- Increased marketing to vendors.
- Further coordination with demand response staff to see if there were opportunities for cooperation.
- Consideration of other types of incentives, such as an early completion bonus, tiered incentives depending on timing of project completion, and/or a small incentive for demand reductions.

In 2005, the limit on incentives was raised to 100 percent of the measure's equipment cost, with no change to the per kWh limits. This increased the ability of EESPs to target small, cash-strapped businesses and aggregate these small projects into one ESB contract. A number of customers interviewed for the 2007 process evaluations reported that they had paid only the tax for their efficiency improvements. The 100 percent limit is much higher than most other large

commercial incentive programs offer (SPC limits to 50 percent), and can only be justified through the rigorous and comprehensive M&V required of ESB projects.

ESB today. For the 2006 to 2008 program period, the program began accepting applications continuously throughout the year, with no closed periods (until funding runs out). “Customer” was dropped from the program name and the program became known simply as Energy Savings Bid. Moving from an RFP based process to an application-based program has vastly simplified program participation. Interviews with project sponsors conducted for KEMA’s recent process evaluation of SDG&E’s nonresidential programs (KEMA 2008b) found that 75 percent of project sponsors rated their experience with the program as very good or good. When asked what program element they were most pleased with, EESPs reported easy paperwork and processes more frequently than any other element. The interviews included one EESP that had participated in the program in its early RFP incarnation. The respondent described the requirements of the original program as “onerous,” referring to the RFP process, and said that the program was much improved.

The payment schedule was simplified to 60 percent paid upon installation (post-inspection), and the remaining 40 percent following M&V. The changes to the payment schedule simplify the program for both participants and SDG&E. Since reporting requirements are tied to payments, reducing the number of payments has reduced the amount of paperwork required of participants. The administrative burden on SDG&E was also reduced. However, both the original and simplified payment schedules can create cash flow issues for participants. A common complaint among project sponsors in the process evaluation interviews was having to wait on 40 percent of the incentive until M&V was complete. The time required for M&V varies depending on the measure (measures with a seasonal component require longer monitoring periods), but some vendors have had to wait as long as a year to receive that final payment. The elimination of the 30 percent payment on delivery of materials does not seem to have reduced the pool of potential participants; even before the change to the payment schedule, participants needed deep enough pockets to carry costs through the M&V period.

The payment schedule was a particular issue with multi-site projects, since payments are not made on a site-by-site basis. So while the sponsor may complete one site, he may have to wait until others are completed (post-inspection) before receiving his first incentive payment. The program allows multi-site projects to be divided into payment groups, but all sites in a payment group must hit a payment milestone before a payment can be made. While better than waiting until all sites in the entire project are completed, this system still means that a delay at one site can mean a delay in incentive payments for several sites.

There was wide variation among project sponsors in how they were affected by the payment schedule. Smaller companies typically found the delay to be a greater problem than larger companies did. Also, the more experience a company had working with utility incentive programs, the more likely it was to view the payment schedule as normal part of doing business.

The rebate limits per kWh were retained from 2005, but an incentive limit of 80 cents per therm saved was added (SDG&E 2007). Although the limits did not change, the average incentives increased from the 2004-2005 program. The average incentive paid by the program was 13 cents per kWh in 2006-2007, up from 10 cents in 2005 and 11 cents in 2004.

The program partnered with the San Diego Regional Energy Office (now known as the California Center for Sustainable Energy, or CCSE) to promote the program to certain market segments through a tax-exempt company (TEC) component of the program, targeting K-12

schools, municipalities and the military. This segment faces unique challenges in completing energy efficiency projects, particularly with budgeting and project approval timelines. These organizations may also not have the same level of engineering sophistication as their private-sector counterparts. In addition to the program incentives, CCSE provides assistance to these organizations in the form of audits and technical support, and may step into the role of project sponsor in some cases. CCSE is well respected and trusted by the organizations it assists, and organizations may find it easier to work with than dealing with SDG&E directly.

A two-time program participant interviewed for the process evaluation had only negative things to say about his experience with a self-sponsored project through ESB, but was extremely positive about participating through CCSE. So different was his experience, he was unaware that it was the same program, perceiving the first experience as an SDG&E program and the second as a CCSE program.

From February through June 2007, the program offered an additional incentive to motivate customers to participate in a demand response program, in keeping with the recommendations of the 2004 process evaluation. While our research did not examine the benefits to the demand response program, the ESB program manager's response to the promotion was unenthusiastic.

The ESB program represents 37 percent of SDG&E's nonresidential efficiency program budget for the 2006-2008 planning period. It is on track to meet its savings goals for the period, and the recent process evaluation identified it as contributing significantly to the expected success of the overall portfolio (KEMA 2008b).

Summary of Program Changes

Table 1 summarizes key differences between the original 2004 program and the program as it was operated in 2007.

Table 1. Key Changes to the Program

2004	2007	Effect
Formal RFP process with limited response times, mandatory pre-bid meetings, etc.	Application-based, open continuously	-Greatly simplified application process in terms of both paperwork and timing. -Increased applications
Payment schedule 30% on delivery of materials 30% on post-inspection 20% on M&V 20% on final submittals and completion of all tasks ^a	Payment schedule: 60% upon post-inspection 40% upon M&V	-Reduced reporting requirements and administrative burden. -Exacerbates cash flow problems for some participants.
Incentives limited to 70% of measure equipment cost.	Incentives limited to 100% of measure equipment cost.	Some measures are able to receive a higher rebate; rebate per kWh or them unchanged Projects can now target customers with more stringent cost-effectiveness requirements
Sponsor provides M&V	Sponsor can opt to use SDG&E M&V contractor	Most firms opt to use contractor. Opens program to customers with less engineering sophistication
	Includes TEC component, targeting schools, municipalities and military	Increased program satisfaction for these customers participating through CCSE

^aThis payment is made only after all paperwork and tasks are completed, to ensure that SDG&E is able to close the book on a project; it is not tied to any additional project requirements and would be made with the M&V payment if all paperwork were complete.

Table 2 presents some key program metrics. Note that for 2004-2005, the values are actual savings and budget spent, determined from SDG&E documents. For 2006-2008, the table shows both the program goals and inception-to-date expenditures and savings, including commitments, as of March 2008. Because one of the programs was for two years and the other for three, all values are also shown on an annualized basis to facilitate comparisons. The program was expanded significantly for the 2006-2008 program period. The annual budget went from an average of under \$10 million per year to more than \$17 million. While energy savings goals are slightly lower on an annual basis, demand and gas savings goals have both increased. As noted above, the average incentive (per kWh) paid by the program was higher in 2006-2007, so the increase in savings was less than proportional to the increase in the budget. The program is on target to exceed its goals in all three areas, assuming that commitments are met (the gas savings goal has already been exceeded by a significant margin, based on installed savings alone).

Table 2 also shows the number of contracts¹ and the number of unique participants in the program by program period.

Table 2. Program Metrics

	2004-2005 Achieved	2006-2008 Goals	2006-2008 Inception-to-Date ^a
Total Budget	\$18,459,186	\$50,943,289	\$35,777,577
Savings Goals			
Energy Savings (net annual kWh)	121,323,216	169,459,500	191,081,437
Demand Reduction (summer peak kW)	20,915	34,902	38,310
Gas Savings (net annual therms)	260,203	594,353	1,468,850
Annualized Budget	\$9,229,593	\$16,981,096	\$15,901,145
Annualized Savings Goals			
Energy Savings (net annual kWh)	60,661,608	56,486,500	84,925,083
Demand Reduction (summer peak kW)	10,458	11,634	17,027
Gas Savings (net annual therms)	130,102	198,118	652,822
Number of Contracts	45	-	60
Number of Unique Participants	30	-	38

^aFrom SDG&E monthly report from March 2008 (SDG&E 2008).

Composition of the Program, Then and Now

Participants

As shown in Figure 1, the mix of projects in 2004-2005 was split almost evenly between EESPs and self-sponsors. By 2006-2007,² the self-sponsored share of contracts had dropped from 51 percent to 38 percent, with EESPs taking an increased share, and CCSE also stepping in a project sponsor. In both periods, however, the EESP-sponsored projects were significantly larger, with incentive dollars being split approximately 80-20 between EESPs and self-sponsors in 2004-2005, as shown in Figure 2.

While some of the change in the mix of participants is due to program changes, such as increased marketing to EESPs and the introduction of the TEC program component, much of the effect seems to be due simply to a higher rate of return business by EESPs. We investigated what

¹ For the 2004-2005 period, the number of contracts does not include contracts which were cancelled or on which no incentives were paid.

² All program participation data was taken from the ESB tracking database, Track-it-Fast, in September of 2007.

Figure 1. Number of Contracts by Sponsor Type, 2004-2005 vs. 2006-2007

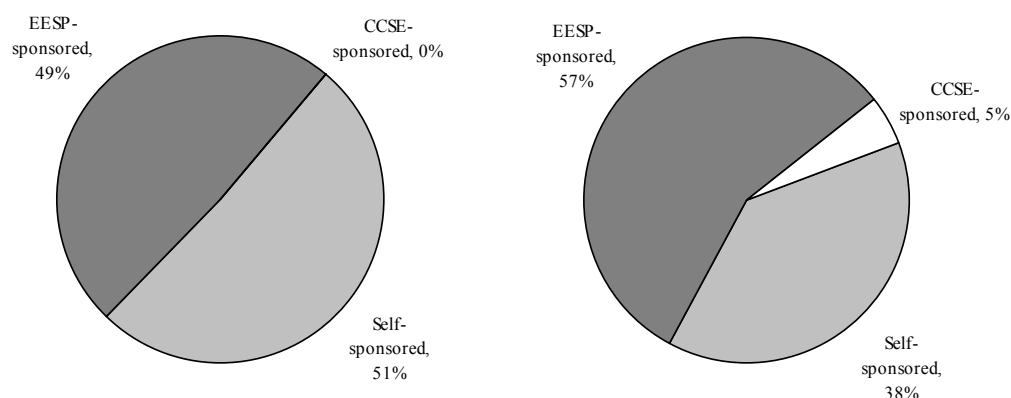
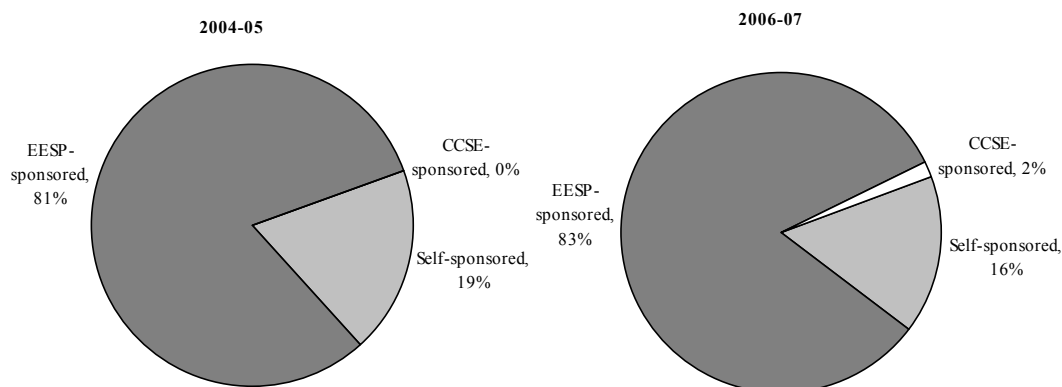


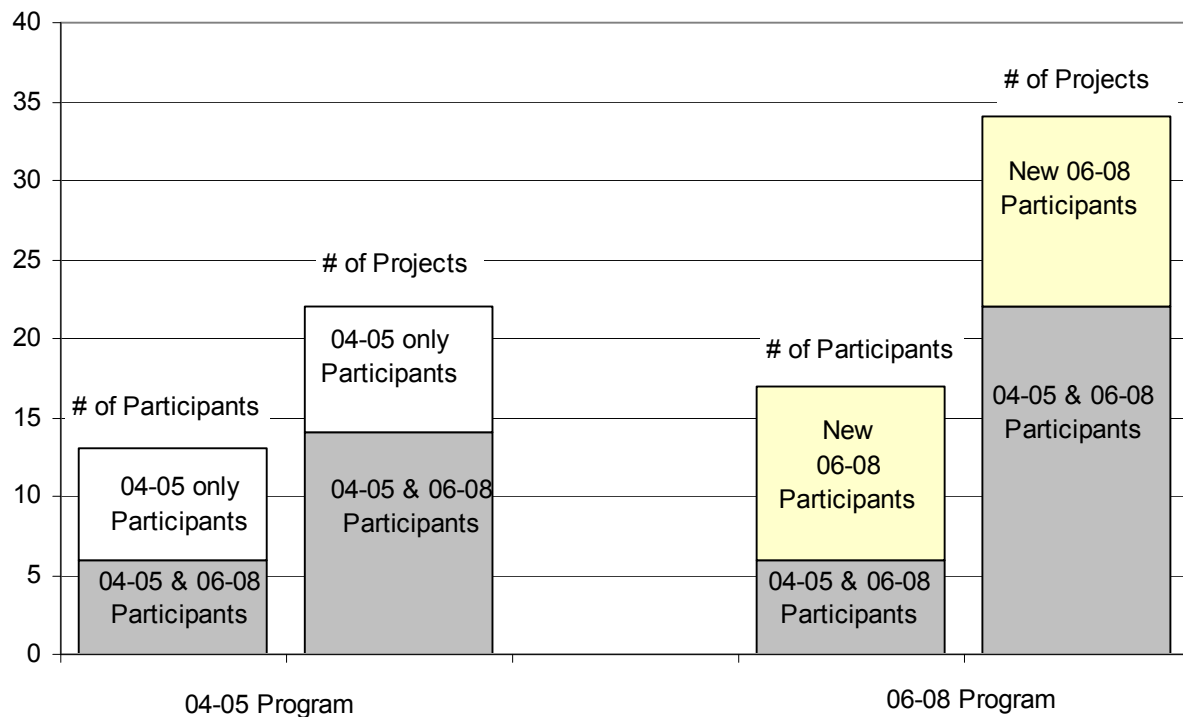
Figure 2. Contracted Incentive Dollars by Sponsor Type, 2004-2005 vs. 2006-2007



percent of EESPs came back to the program for additional projects after their first year, and what percent returned for the program's second term in 06-08. As Figure 3 shows, fewer than half of 04-05 EESPs continued with the program into 06 and beyond, but these participants accounted for more than 60 percent of all 04-05 projects. By 2007, the EESPs that departed the program after 2005 had been more than replaced by new participants. However, the veterans of the program held their share of projects steady at more than 60 percent. These repeat participants have found ESB to be a good fit in their business models. Experience and program improvements have ironed out any obstacles they may have had in the past.

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Figure 3. EESP Repeat Participation Metrics: Number of Participants and Number of Projects



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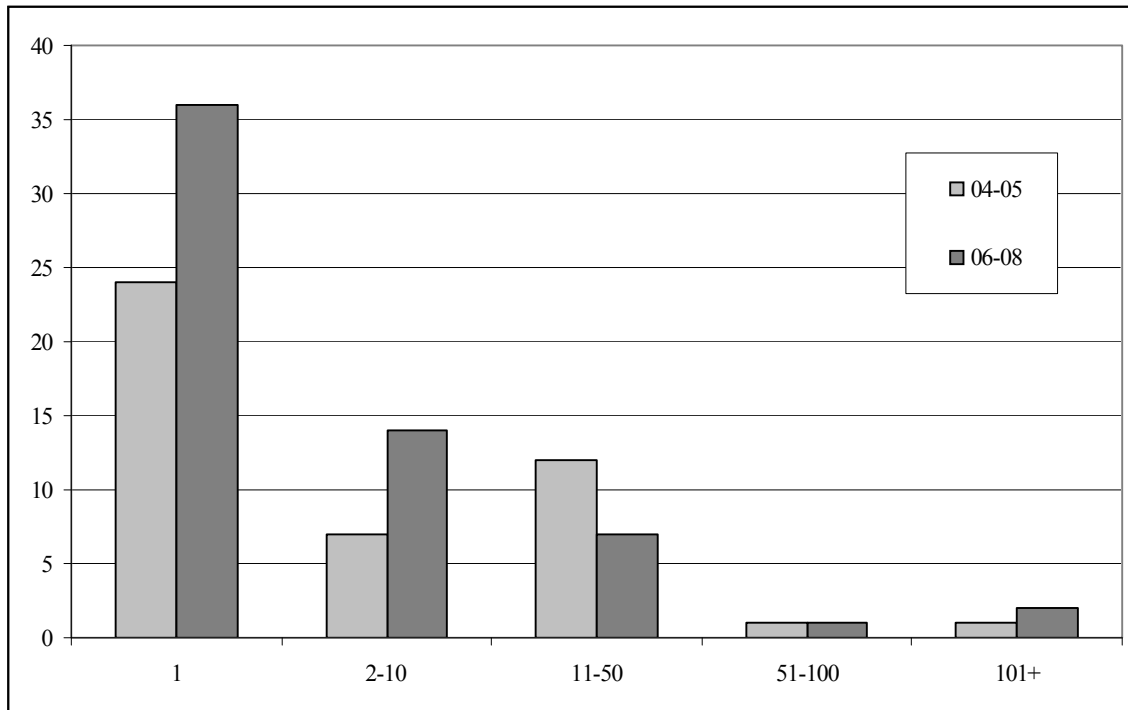
The mix of participants is particularly significant because results of the recent impact evaluation of the 04-05 program and process evaluation of the 06-08 program suggest that self-sponsors are typically less satisfied with the program and are more likely to be free riders. The 2004-2005 impact evaluation (KEMA 2008a) found 27 percent free ridership among self-sponsors, compared to only 5 percent for EESP-sponsored projects.

Projects

One interesting aspect of ESB projects is the degree of aggregation. Many ESB “projects” are very similar in scope to efficiency programs funded by SDG&E but operated by third parties (EESPs). In fact, some of the EESP sponsors of ESB projects also operate third party programs for SDG&E. There seem to be some advantages to providing service under the scope of ESB compared to running a third-party program. As a third-party program operator, the EESP is a contractor to SDG&E; under ESB, it is employed by the end customer and is a client of the program. Under the ESB program, the EESP has great flexibility in the kind of projects it can do and the types of customers it can serve, which is not typically true of a third-party program. Under ESB, the EESP can also apply for more incentives, expanding existing projects or adding new ones, where the budget for a third-party program is typically fixed.

Figure 4 shows the breakdown of projects by how many individual customer sites were included. In 2004-05, the sizes ranged from one up to more than 300 sites. The largest project in

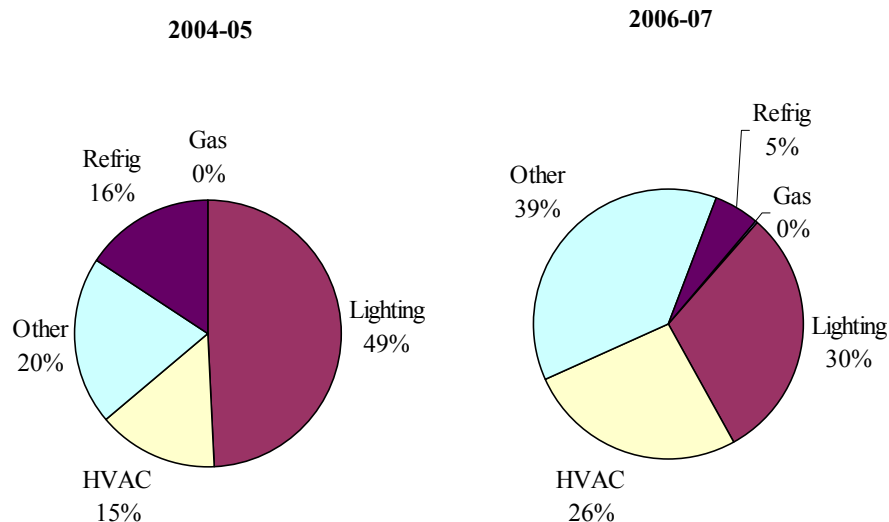
Figure 4. Distribution of Projects by Degree of Aggregation (# of Sites per Project)



2006-2007 is more modest in scope at only about 160 sites. The 2006-2007 projects show a marked increase in single-site projects.

The increase in single-site projects may be linked to the shift in measure types, since lighting and refrigeration projects have tended to include multiple sites while HVAC projects more often include only one site. In 2004-05, almost half of all measure incentives were for lighting projects, with the remainder almost evenly split between HVAC, other, and refrigeration (see Figure 5). In 2006 and 2007, the “other” category had grown to the largest group of measures, thanks in part to a large project installing carbon monoxide sensors. HVAC projects had also increased, while the share of lighting and refrigeration had decreased. With the exception of the HVAC tune-up project in 2004-05, HVAC projects under the ESB program

Figure 5. Breakdown of Incentive Dollars by Measure Type, 2004-2005 vs. 2006-2007



have tended to be single site projects, often involving multiple heating, cooling, and/or ventilation measures.

The Future of the ESB Program

The recent process evaluation of the ESB program found that EESPs generally had higher levels of satisfaction with the program than self-sponsors. Self-sponsors differed widely in their degree of engineering sophistication and in their experience with efficiency programs, and this was reflected in how easily they were able to navigate the program. The evaluation report determined that the program would benefit from better screening of potential self-sponsors, redirecting those lacking the necessary knowledge and experience to participate through an EESP or CCSE. The report recommended providing additional support to self-sponsors, specifically more closely monitoring the progress of a project so that potential delays can be avoided, and also developing case studies to help market the program and educate potential participants about program processes.

The program is currently dominated by EESP-sponsored projects, and this pattern is likely to continue. EESPs are much more likely to be repeat participants than self-sponsors, and are also more likely to do large multi-site projects. As they accumulate experience with the program, participation becomes easier and more routine. The recent impact evaluation also shows that free ridership is lower among EESP-sponsored customers than among self-sponsors, so it is unlikely that SDG&E will seek to reverse this trend.

Conclusions

The ESB program began with three key strengths: flexibility, high incentives, and rigorous M&V. However, it was hampered by an onerous application process. Using an RFP approach, it was time sensitive, non-standardized, cumbersome, and unfamiliar to many potential participants. These problems were reflected in the low number of proposals received under the first two RFPs.

In August of 2004, the reinvention of the program began. A switch to an application-based process made the “Bid” in the program name a bit of a misnomer, but it marked a milestone in streamlining project paperwork. Participants now view the paperwork as easy compared to other similar efficiency programs, in marked contrast to the RFP process.

The ESB program offers the highest incentives of any large commercial incentive program in California. While the incentives have been high from the beginning, they can now be as high as 100 percent of measure costs, which allows projects to target customers whose otherwise lack the resources to invest in energy efficiency. Customers participating in ESB projects through an EESP include such hard-to-reach businesses as convenience stores.

Measurement and verification have always been program requirements, but originally had to be done by the project sponsor, which proved to be a major obstacle for many participants. The introduction of an SDG&E-approved M&V contractor simplified participation and made the program more accessible to potential participants that might have lacked the capability to do their own M&V.

The flexibility of the program has been a key element of the program from the beginning. Almost any measure with demonstrable savings is eligible, and the program has included measures that have not yet made it into other more prescriptive programs. The ability to

aggregate measures and sites are very appealing to potential participants, particularly EESPs. Aggregation also allows participation by smaller customers through a sponsor, setting the program apart from other large commercial programs.

By the beginning of the next program period in 2009, we can expect the shift away from self-sponsors toward EESPs to continue. The program has already picked up some additional repeat participants since 2006; some of these can be expected to stick with the program for the long term.

Given the program's past successes, this program will continue to be a workhorse among SDG&E's nonresidential programs for the foreseeable future.

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