SoCalGas New Construction Process Evaluation Study Report

Final Report

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This study has been conceived as a special-purpose process evaluation, to inform the Southern California Gas Company's new construction program managers about how well their current program processes are working for their customers, and for meeting their 2006-08 goals. This study is also to suggest possible improvements that could be adopted in the program design or operations. Based on discussions with SoCalGas the study scope was limited to Savings By Design, along with a component of Sustainable Communities, and Advanced Homes.

Data collections activities included interviews with program staff to gain an understanding of program activities, issues, and goals, and focus groups or interviews with program participants to gain customer feedback..

Based on the interviews and focus groups we conducted, several consistent themes emerged that helped define recommendations for ways to enhance the programs. We also note these observations are based in part on experiences of builders who participated in the program one or more years ago, so some of the recommendations may have already been implemented or are underway. In these cases, conclusions from our research can further justify such program revisions.

1. Savings By Design Recommendations
    a. Provide Early Energy Charrettes - The objective of the charrette would be to review all of the potential energy efficiency aspects of the project, and to explore all feasible, "out-of-the-box" ideas at an early enough stage that they could conceivably be incorporated into the project.
    b. Push High Efficiency, Not LEED - Pparticipants were skeptical about LEED and its value, yet they all acknowledged that higher levels of energy efficiency were valuable. This led some to question why the utility would make LEED certification a requirement for higher level incentives, rather than simply providing higher incentives for higher efficiency.
    c. Expand Credit for Unconventional Efficiency Measures - As SBD becomes increasingly ambitious, it may become necessary to update the analysis methods to credit measures that lie outside the T-24 compliance domain.
    d. Establish Track for Cutting Edge Projects - Some of the designers, however, suggested that there be a track specifically established to encourage cutting edge projects that significantly diverge from conventional energy efficiency solutions, and which could demonstrate substantial new opportunities for advanced energy efficiency. The projects would likely be smaller scale projects with committed owners, but this option might help to point the way forward for the next level of efficiency.
    e. Provide Early Design Team Incentive Payment - Designers value the design team incentives and would like to have them earlier in the design process. Because the typical design team incentives arrive so late, often years after the extra design effort was expended, the link between the reward and the

behavior it encourages is lost. If it were easier for designers to receive a portion of the incentive earlier, it would likely be more influential and give SBD a more prominent role in their projects.

f. Encourage Public/Private Partnerships for Renewables - One of the school district participants used a model a public/private partnership for photovoltaics on their facility rooftops. It involved the district essentially leasing its roof area to a private investor, who paid for and operated a PV system. The school district shared in the energy savings dollars, and the investor was able to take advantage of the depreciation and tax credit incentives for the PVs, which would be wasted if the school owned the system. The utility could build upon this sort of innovative financing model, by actively encouraging and facilitating it to produce greater savings and renewables than would otherwise be possible.

2. Advanced Homes Recommendations

a. Program Components

- Institute more continuity in program offerings: Establishing a program label and requirements that are fairly constant and predictable over several years would likely increase participation and builder commitment.
- Leverage ENERGY STAR and LEED: Consider providing a range of ratings (such as ENERGY STAR and ENERGY STAR Silver, Gold, and Platinum) as ways to recognize various efficiency levels and leverage the LEED terminology.
- Continue to offer prescriptive options: Although simplification would justify reducing program options, the flexibility of a prescriptive program component could increase participation by bringing in builders who are unable to do comprehensive efficiency upgrades.
- Enhance demonstration/case study program component: These projects provide a vehicle for promoting and demonstrating advanced technologies and innovative designs.

b. Program Processes

- Program marketing materials should be improved: All materials should be at a quality level comparable to other professional marketing directed at builders and home buyers. The program Website should be reviewed and modified to increase its usability.
- Participants should receive recognition: Plaques for program homes or for participating builders to display could be useful for promotion. Recognition of rental properties in the program could help overcome the first-cost hurdle by informing renters their utility bills could be lower..
- Account Executives' role in recruiting and marketing should be enhanced: Account Executives are the main avenue for recruiting participants, but it appears turnover and other factors have disrupted their ability to work with potential participants.

c. Program Services

- Incentive amounts should be reexamined, taking into account current market conditions: Builders face a significant market downturn that could justify a short-term increase in incentives. Incentives should be examined, given recent trends in construction costs.
- Provide incentive options for architects, designers, engineers, and energy analysts: These industry members are key to helping builders select energy-efficient measures and incorporate them in their designs. Special analyses to examine additional measures increase design and analysis costs; so incentives for these activities could increase participation.
- Ramp up industry training and education while the industry is slow: The slowdown appeared to be a good time to develop and offer training on selected topics.
- Develop training modules available online: Specific training modules builders and others could access through Webcasts or at any time of their choosing would reduce travel costs and schedule disruptions.
- Focus training on benefits and costs of efficiency improvements: A common concern builders expressed was a lack of understanding about the benefits of efficiency improvements required by the program. Similarly, many said they were unsure what the most cost-effective ways were to meet program requirements.
- Provide training on compliance with the thermal bypass checklist: This ENERGY STAR requirement appeared to be a major obstacle for builders, but it is required to achieve ENERGY STAR energy savings. Programs and materials should be developed in conjunction with the industry to train builders and contractors on how to meet the requirements most cost-effectively.
- Produce information on comparative costs and energy savings of alternative measures: We suggest the utility work with the industry to determine the most useful format—for example, standard tables or calculating spreadsheets—for providing this information. Research would need to be conducted to compile cost ranges and energy savings of various energy-efficiency options. This information would need to be regularly updated to stay current.
- Provide a list of resources and contractors: Several builders said a list of information sources and contractors who could provide services required under the program would be very helpful. This could be provided on the program Website. Suitable screening processes and disclaimers would be required as would a process for removing resources and contractors from the Website.
- Provide access to a hotline: Various other energy-efficient and green building programs have developed hotlines for program and technical information, and they are usually well used. The utility should investigate the costs of providing such a service or linking into a similar hotline provided by another entity.

- Provide additional technical assistance and limited design assistance: The utility may have staff capabilities to assist builders with technical issues related to meeting program requirements. Account Executives could be more effective if they had training in technical issues or could link customers to utility employees or consultants who could provide the required assistance. The utility should be able to respond to designers and architects to provide access at least to limited design assistance.

d. Communications

- Outreach to architects, engineers, and HVAC contractors should be increased: Historically, the program has not reached out to broader groups in the residential market. Communicating with architects, engineers, and a range of contractors could help promote the program and improve participation and performance.
- Communications should be more timely: Given expressed concerns about frequent program changes and lack of builder awareness, greater effort is required to inform program target audiences about program changes. One option would be, whenever the program changes, sending emails to all past and current participants and to builders on lists developed by Account Executives.
- Internal communications should be frequent and timely: For Account Executives to be most effective, they need to stay current regarding program features and likely changes. Regular meetings with program managers and frequent internal electronic postings among all program staff would be useful for sharing lessons learned and new information that might affect future directions.

2. INTRODUCTION

As requested by the Southern California Gas Company (SoCalGas), the HESCHONG MAHONE GROUP, INC. (HMG) and Quantec, LLC (Quantec)[1] submit this work plan describing the methodology for the process evaluation of Savings By Design and Advanced Homes. This work was carried out under SoCalGas contract number 5660009223.

2.1 Overview of Process Evaluation Objectives

This study has been conceived as a special-purpose process evaluation, to inform the SoCalGas new construction program managers about how well their current program processes are working for their customers, and for meeting their 2006-08 goals. This study is also to suggest possible improvements that could be adopted in the program design or operations.

Due to the limited scope, budget and time for this study, the HMG team is foregoing many of the features of a more comprehensive process evaluation, such as random selection of survey respondents, surveys of non-participants, or detailed review of program tracking systems. These limitations have been discussed with the SoCalGas project managers, and they have confirmed that the scope of this study is in conformance with their needs and expectations.

2.2 SoCalGas New Construction Programs Overview

SoCalGas's new construction programs include:

- Nonresidential
  - Savings By Design (SBD)
  - Sustainable Communities (SC, merged with SBD)
- Residential
  - Advanced Homes (including California Energy Star New Homes Program, Prescriptive Measures)
    - Third-party CHEERS Rating Program

Based on discussions with SoCalGas, its SBD program is presently limited to industrial process projects. Because SoCalGas intends to revamp SBD to include more project types, a process evaluation of current program practices is not needed. Instead, a concurrent study for San Diego Gas & Electric Company's Savings By Design program will be used to provide insight and recommendations on how SoCalGas's SBD program should be revamped.

In addition, the Sustainability Alliance was removed from the study scope because its current program intent did not tie in with this study.

[1] Quantec, LLC merged with the Cadmus Group in May 2008.

3. METHODOLOGY

This section discusses our approach in providing the requested services. The purpose of the evaluation is to provide a formative assessment of SoCalGas's new construction programs based on staff and customer feedback.

3.1 Data Collection and Analysis (Nonresidential)

For the nonresidential new construction sector, the data collection effort consisted of two stages:

- Interviews of Savings By Design program staff to gain an understanding of program activities, issues, and goals
- Focus groups with SBD program participants to gain customer feedback

3.1.1 Staff Interviews

Key Savings By Design program staff (program managers, customer account representatives, and program engineers) were identified and recruited for an in-depth interview. Each interview lasted approximately 20 minutes and consisted of open-ended questions. The interviews guide is provided in the Appendix. The interview questions explored program staff's views on issues including:

- Customer acceptance of the whole building paradigm and the systems analysis alternative
- Role of design team incentives in encouraging participation and improving energy efficient design
- Role of owners incentives in encouraging more efficient buildings
- Perceived value of education and technical assistance
- Participation in broader goals of Sustainable Communities Program, including role of renewable energy (reasons for and against)
- Perceptions of program procedures (applications, energy analysis, incentive payments, verification, etc.)
- Consideration of customized program offerings for each product type
- Other ideas/suggestions for program improvement

The following individuals were interviewed for the study:

- Chip Fox - Manager SBD
- Lianna Rios - Supervisor SBD
- Bob Nacke - Senior Engineer SBD
- Roger Yamasaki - Senior Engineer SBD
- Chuck Poindexter -Senior Account Executive SBD

- Dan Schweizer - Account Executive SBD
- Marianne Sy - Account Executive SBD

3.1.2 Face to Face Focus Groups

As part of our process evaluation study, we gathered information from Savings By Design program participants through three focus group sessions. The purpose of the group discussion was to determine:

- The perceived value of energy efficient building design
- The building design process – key decision-makers and how the program can influence their choices
- The influence and role of SDG&E and Savings By Design in the nonresidential new construction market, in general, and in the participants' projects, in particular
- Opinions on the Savings By Design program process
- Program improvement suggestions

The recruitment intent was to gather active program participants who were knowledgeable about the program and could provide useful feedback. Thus, non-participants were not included in the study. Many of the focus group participants had been involved with SBD for many years over several projects, which allowed them to demonstrate a historical program perspective and a long working relationship with the utility.

The recruitment strategy for the focus group relied on SBD program representatives to enlist participants This was to take advantage of their established, working relationships with the invited participants, who were all busy professionals. We believe other recruitment approaches would not have been as successful. The focus group sessions were well attended, largely because of this recruitment approach. In addition, each participant was offered a $100 dollar honorarium for their attendance.

The focus groups were divided into separate sessions with architects, mechanical/electrical engineers, and owners/developers. The following tables provides the attendees for each session:

SBD Focus Group - Architects	Monday, September 10, 2007: 5:30 – 7:30 PM
Kathy Lord	HMC Architects
Alison Whitelaw	Platt+ Whitelaw Architects
Frank Ternasky	Delawie Wilkes Rodrigues Barker
Jim Gabriel	Hana Gabriel Wells
Scott Thomas	Zagrodnik Thomas Architects
Kevin Krumdeck	Carrier Johnson
Kevin Nivinskus	Studio E Arch
Sean Tracy	Pacific Cornerstone Architects
Jim Ferguson	Ferguson Pape Baldwin Architects
Joe Kelly	Sprotte Watson Architecture Planning
Beth Brummitt	Brummitt Energy Associates

Table 1: Architect Focus Group Attendees

SBD Focus Group – Developers & Owners	Tuesday, Sept. 10, 2007: 10:00 AM – 12:00 PM
Larry Young	Qualcomm
Evan Leslie	San Diego City Schools
Gerry White	UCSD; Facilities Design & Construction
John Heredia	Chula Vista Elementary School District
Bruce Rainey	Scripps Health
Harvey Rogoff	Harper Construction
Greg & Phoebe Hamann	Hamann Construction

Table 2: Developers and Owners Focus Group Attendees

SBD Focus Group - Engineers	Tuesday, September 11, 2007: 5:30 – 7:30 PM
Mark Bender	Bender Dean Engineering
Dale Franchak	ILA+Zammitt Engineering
Genko Ganev	McParlane
Al Jogoloff	Crown Construction
David Merrick	Merrick & Associates
Randy Minnier	MPE Consultants
Gene Walsh	Walsh Engineers
Frank Sharpour	SC Engineers
Crhris Weixelmann	Randall Lamb
Ramona Bacula	Syska Hennessy Group

Table 3: Engineer Focus Group Attendees

The sessions were held at a professional market research facility, with a mid-sized conference room format. The location, in La Jolla Village, was conveniently centrally located, and free parking was provided. The facility provided refreshments and light sandwiches. Sessions were video recorded, and utility personnel were invited to observe from behind a one-way mirror. Chip Fox was the primary observer, and his feedback was solicited during the mid-point break, to assist in exploration of key program issues.

The focus groups were facilitated by Cynthia Austin. Douglas Mahone observed, took notes and occasionally pressed for clarification. A discussion guide was prepared in advance, and was used by the facilitator to ensure that all topics of interest were discussed (see Appendix for a copy of the guide). The conversations, however, were generally allowed to flow naturally between and among the participants. The facilitator intervened at key junctures to ask leading questions or to redirect the discussion to a new topic area.

The focus group guide is provided in the Appendix.

3.2 Task 5: Data Collection and Analysis (Residential)

For the residential sector, a similar format from the nonresidential data collection and analysis was laid out, with slight modifications. As agreed upon at the kick-off meeting, the study concentrated on the Advanced Homes programs for SoCalGas. The data collection effort consisted of two stages. In the first stage, Advanced Homes program staff were interviewed to gain an understanding of program activities, issues, and goals. In the second stage, focus groups or interviews were held with program participants.

3.2.1 Staff Interviews

In October 2007, Quantec staff conducted telephone interviews with the utility program implementers. Interviews included staff managing and overseeing the program, and Account Executives providing direct contact with builders, developers, and other program participants. The interview guide is presented in the Appendix.

Overall, these interviews sought to gather utility staff insights about key process issues related to the program and to compile recommendations for potential program enhancements. Specific topics addressed in the interviews included:

- Respondents' roles and involvement with the program;
- Information on the demonstration/case study program component;
- Feedback on the prescriptive and performance program components;
- The role and effectiveness of program incentives;
- Perceived value of education and technical assistance;
- Participation in broader sustainability goals, including the role of renewable energy, and reasons for and against;
- Perceptions of program procedures: marketing; participation identification, recruitment, and selection; application process; quality assurance and field verification; and
- Possible program enhancements or improvements.

Nine interviews were conducted with utility staff involved with the program. Two were program management staff. Three said their primary or secondary roles were as Account Executives, and the remaining person provided administrative support for the program.

3.2.2 Participants Face to Face Focus Groups and Interviews

As part of our process evaluation study for the Advanced Home Program, we planned on holding two focus groups with participant builders, designed to elicit feedback on:

- The value of energy-efficient building design;
- The building design process—key decision makers and how to influence their choices;
- The influence and role of the utility and the Advanced Homes Program in the residential new construction market, in general and, in the participants' projects, in particular;
- Opinions on the Advanced Homes Program process; and
- Program improvement suggestions.

We planned to convene one evening. A contract was established with a facility to recruit participants and provide the facility and services. From program data provided by SCG, we selected a semi-random sample of more than 30 participants in the San Diego area. The facility went through the entire initial list with limited recruitment success. We then supplied additional names, ultimately providing the entire list of program participants to the facilities. The facility was able to recruit any participants, but six builders agreed to

attend the Irvine group. Most builders were offered a $100 stipend to attend. The group was held April 15. One of the six people cancelled at the last minute, so only five attended.

Attendees were from the following companies: The Irvine Company, John Laing Homes, Standard Pacific Homes of California. Characteristics of attendees and their projects are summarized in Table 4. The group provided a fairly complete cross-section of builder types.

Attendee ID	Job Title	Market Segments	Location	Type(s) of AHP Projects
Builder A	Purchasing Analyst	Single-family	Greater Los Angeles	Prescriptive measures
Builder B	Purchasing Director	Production builder, single-family, multifamily	West Coast	Prescriptive measures; ENERGY STAR
Builder C	N/A	Single-family communities, townhomes	San Diego area	Prescriptive measures, ENERGY STAR
Builder D	President	Single-family, multifamily	San Diego area	Single-family, ENERGY STAR

Table 4: Builder Attendees Attendee Characteristics

We moderated the focus group using an interview guide submitted to SCG for review and comment. The guide was structured around the following discussion topics:

- **Introductions and initial observations**: Introductions by the evaluation team and each participant, including: market segments targeted and types of AHP projects conducted; participant observations about the program and energy efficiency, sustainability, and green building and value in market.
    - Program awareness and decision to participate.
    - Perceptions about program procedures.
    - Perceived value of program services.
    - Program success and effectiveness: Demonstration projects, prescriptive measures, ENERGY STAR, and education components.
    - Program effects: Outside of utility area, through partnering approaches, and in different market segments.
    - How program has changed building practices.
    - Suggestions for improving the AHP

The complete focus group guide is presented in Appendix.

4. RESULTS

4.1 SBD Staff Interviews

4.1.1 Whole Building Approach vs. Systems Analysis

The majority of projects use the whole building approach rather than the systems analysis. Staff indicate the major influence in projects choosing the whole building approach is early project involvement in the program and size of project. Likewise, projects in later design stages or projects that are only tenant improvements tend to use systems analysis. The whole building approach is considered superior over system analysis because of greater energy and cost savings over the life of the building

4.1.2 Program Incentives

Almost all program projects use both the design team and owner incentives. Only a small portion (<20%) apply for just the owner incentives.

The design team incentive underthe whole building approach is still considered a useful program feature. It makes up for additional modeling costs for larger buildings and encourages better communication between the design team and the owner. However, some project leads hand the design incentive directly to the owner/develop,r instead of dividing it up among the design team members, as a client appreciation gesture.

Staff members would like to see the removal of the incentive cap with the 2008 standards and lowering the threshold cap. It would bring in more projects by taking away the program limitations.

4.1.3 Program Procedures

Staff members felt program application procedures could be more streamlined, allowing for electronic signatures or online applications, and allow for multiple projects per single owner's letter of interest. The basis for these recommendations is to minimize customers' administrative burden, especially as building timeframes have shortened from prior years.

Because design teams do not always utilize their engineering consultants early enough on the process, energy analysis completed by Sempra staff should still be offered as a service to customers. However, the energy analysis procedure can be streamlined by creating one uniform template with plan check results, return on investments, and energy savings for each energy conservation measure.

The verification process could only be improved by improving the quality of inspections. Greater training for internal inspectors, and creation of quality assurance protocols and labeling documentations are recommended.

According to program staff, commissioning needs to be highlighted as a useful part of the building process. Staff believe commissioning helps ensure the long term program goals. Suggestions include granting commissioning incentives and creating commissioning guidelines to customers.

4.1.4 Sustainability goals as a Program feature

While the concept of sustainability has a growing presence in the building community, program staff differed in whether a separate sustainability program focus is needed. Participation in both Savings By Design and Sustainable Communities occurs for only a minority of participants (30%) who are looking at renewable options. One recommendation to encourage participation in both programs is to better coordinate paperwork for customers.

4.2 SBD Focus Groups with Program Participants

The following section presents our observations and analysis of the overall focus group findings (combining all three). .

4.2.1 SBD General Observations and Themes

Changes Over Time

Similar sets of focus groups have been conducted by Douglas Mahone and others at HMG, beginning as early as 1990, in relation to California's nonresidential new construction programs. One of the most striking aspects of these latest focus groups was the change in attitudes, regardless of professional capacity, which have occurred over that time. In the preliminary focus groups, there was a great deal of concern about the difficulty and cost of just meeting the (then relatively new) Title 24 requirements. There was confusion about why the utility would be encouraging its customers to use less of its product. There was little conviction that owners or clients cared about energy efficiency. In comparison, none of these issues was voiced in the current focus groups as the major problem, although echoes of these concerns could be noticed. Rather, there was widespread acknowledgement that energy efficiency was possible. Even more important and significant, owners and designers had embraced energy efficiency in principle, and usually in practice. There was greater awareness of sustainability, and even a strong undercurrent of pride that California buildings are so advanced in energy efficiency. This is a tidal shift in opinion from focus groups in the 1990s.

SBD Is an Influential Part of the Landscape

Another strong observation is that SBD is, at least amongst this group of practitioners, a firmly established player in the new construction landscape. The incentive dollars for the owners are seen as very influential in pushing building designs beyond Title 24, even though the dollars are not that significant in the overall construction budget. The credibility lent by the utility makes it easier to "sell" energy efficiency as a reasonable building practice. The long-term relationships that the utility has established within the building community are valuable, and SBD is credited with helping to advance both the Title 24 energy codes and buildings designed to exceed the code. SBD program reps are known and valued, especially the most experienced. It was evident those personal relationships need to be continued and valued within Sempra. All three groups felt that, if SBD were to end, construction practice in general would quickly revert to "just meet" Title 24 and not to go beyond. Also, SBD was praised for being relatively simple and easy to understand, especially in contrast to other government and utility program

offerings. As a side note, many customers continue to be confused by the similarity between SDG&E and the former SDREO (now the CCSE)

Beating Title 24 Will Become More Difficult

In the two focus groups for architects and building developers/owners, there was a "conventional wisdom" perspective that it will become increasingly impossible to design to efficiency levels significantly better than code, as the energy code continually becomes more stringent. When pressed, however, many acknowledged that they could design buildings to be significantly more energy efficient if owners could be persuaded to let them design less conventional systems, or if project financing could be less constraining (e.g. for school districts).

However, engineers held a different view. They readily admitted there were more opportunities for greater efficiency in building design. However, they felt their role in the design process was limited, and so they could not give input at the appropriate design process decision-making period.

Sustainability is Important; LEED Not So Much

Despite nearly universal awareness of LEED and sustainability issues among the focus group participants, there was significant skepticism that the LEED rating was worth the time and expense. All three groups cited the difficulty in documenting a project for LEED certification, stating that the process was time-consuming and expensive. They also noted various LEED requirements that were difficult or inappropriate in San Diego. Many cited projects which sought sustainability in the design, but did not find it worthwhile to through the LEED process. The architects were the most supportive of LEED, while most of the owners and engineers were wary of a LEED certification's value. The participants also observed that LEED is only one of several ways of defining sustainability and energy efficiency (e.g. CHPS, Title 24), although it is probably the most rigorous. There is confusion in the marketplace about the various rating requirements, which are not all compatible with each other.

Owners Are the Most Influential Drivers

All three groups pointed to the owners as the most influential drivers in SBD participation and in the decisions to design more energy efficient buildings. Architects were the second most influential, especially for projects with inexperienced owners, and as lead generators for SBD reps. But owners who were doing multiple projects over time would often declare SBD participation as part of the project goals from the outset, and would direct their design teams to work with the utility. The designers reported that owners did not always understand the technical aspects of energy efficiency, but they did know to ask for a percentage improvement beyond Title 24, as SBD requires. Engineers seldom are afforded the opportunity to participate in projects early enough to be the SBD initiators, although their recommendations and calculations often provide the necessary documentation. We note that these observations are unchanged since the focus groups we conducted in early days of SBD.

Recognition is an Important Motivator

All three groups said that the utility recognition given to SBD projects was at least as important as the incentive dollars. The value of the recognition varied. For designers, it helps them to win new projects. For builders, it helps them to sell their buildings. For owners, it helps enhance their company's public relations imag and to sell their projectse. Plus, the utility endorsement helps justify the efficiency investment. All of the groups spontaneously cited the value that SBD recognition provided.

Ambivalence Toward Design Team Incentives

Since the inception of SBD, there has been a degree of ambivalence within the design community about design team incentives. Most designers, and most thoughtful owners, acknowledge that the incentives are important in helping to motivate designers to "go the extra mile" for energy efficiency. They also acknowledge that incorporating more efficient building design does require extra effort and persistence. At the same time, designers do not feel that their incentives are substantial, and the incentive payments usually are paid late in the process that they do not significantly affect their design budgets. The design team incentives are viewed as more of a "goodie" after the project is mostly done. Some designers are still uncomfortable taking money from the utility to influence how they serve their clients, and few even hand over the incentive dollars directly to their clients. Others, however, express resentment toward clients who simply take the incentive check for themselves. These mixed sentiments have not changed since our first focus groups on SBD, and they do not suggest to us a need to significantly alter the design team incentive structure or amounts; indeed, we think it would be detrimental to remove them. The one request that should be considered, however, is to provide a portion of the design team incentives earlier in the process for all projects. Currently, this only happens when projects reach the 20% beyond Title 24 threshold and have LEED certification, under the Sustainable Communities option.

Program Processes Still Need Streamlining

The utility's SBD processes were acknowledged to have improved over time, yet there were multiple observations indicating that they still need to be further streamlined. A key complaint, which has not really changed over time, was the time required to get review and approval for a SBD application. Some projects did not participate because the approvals could not be obtained in time to meet the project schedule, with many fast track projects not even attempting participation for this reason alone. This is significant because many participants indicated that project timelines have been reduced to half the time available a few a years ago.

Some felt the delay in application approval process was due to the limited staffing and resources of the SBD engineering review staff. The engineering staff is well respected, and their experience/input is seen as valuable on projects, but it is apparently not available enough to always meet demand. Others pointed to some cumbersome aspects of the application process, such as the requirement to have multiple wet signatures on the application form (which can require a lot of time moving the form around between offices). Despite its existence in the SBD Participant Handbook, some participants asked if there could be a program process flowchart that would enable them to better understand where they were in the process. They also expect the SBD program reps to know where

projects are in the process and to contact them in a timely manner when actions need to be taken.

Utility Should Probably Run SBD

Participants were asked a final question about whether SBD should continue to be run by the utility, or whether it could be run as effectively by some other entity. Few of the participants had considered this possibility, and they seemed unsure how to respond. A few gave a quick answer to the effect that it didn't matter who ran the program as long as they delivered the incentive checks. Upon further reflection and discussion, however, the prevailing opinion seemed to be that the utility was the logical entity to run SBD, because it is well known and respected, and can lend more credibility to the program than a lesser known entity could. We had expected this answer, and so were more surprised by the initial response, especially since these groups of participants had long experience with SBD and the utility, and were selected by program staff. We take this as an indication that SBD needs to keep its offerings and processes effective and valuable to its customers, and that the customers must not be taken for granted.

4.3 Advanced Homes Staff Interviews

4.3.1 Staff Roles and Program Involvement

Program managers indicated their roles included: program design, developing processes and procedures, implementation, analysis, and addressing issues that came up in the field.

Account Executives served as the primary point of contact with program participants. Because of geography, some Account Executives worked with builders who constructed homes in both SCG's and San Diego Gas & Electric's service areas. For this report, findings from Account Executives are reported for those who worked with builders operating primarily in the area served by SCG.

The most common roles Account Executives cited playing were: educating builders about energy efficiency, informing them about the program, and assisting them in enrolling. A supervisor indicated she was responsible for assigning both single-family and multifamily home builders to Account Executives. Specific functions Account Executives identified included:

- Promoting the program;
- Describing potential incentives;
- Making presentations to builders on ways they could improve energy efficiency, including the specific methods under the program;
- Reviewing Title 24 with participants and making them aware of any changes;
- Facilitating information-gathering from participating builders;
- Visiting job sites to meet with the job superintendent and review project aspects, such as the Quality Insulation Installation (QII);
- Resolving any issues coming up in projects and making sure projects stay on schedule; and

- Delivering incentive checks.

One Account Executive specifically mentioned reaching out to recruit multifamily builders. Another described the basic process as her team receiving a list of builders to contact, with the team then dividing up the builders and making the contacts. She said she usually worked with 60 to 70 builders.

One Account Executive said she prepared the application for participants because it saved time by preventing applicants' mistakes. Another said getting required information was "like pulling teeth."

Program staff were asked what types of housing projects they typically worked with. For the overall program, the manager described project inventory as a good mixture of single-family attached and detached homes, low- and medium-rise multifamily housing, some affordable housing, and some high-rise projects (four stories or more).

Almost all Account Executives indicated their projects were split between single-family and low- to mid-rise housing. Single-family homes predominated, with a couple indicating more than 90% of their projects were single-family. One Account Executive cited their work as exclusively multifamily, including a few high-rise projects.

4.3.2 Demonstration/Case Study Projects

The program's demonstration/case studies component works with design teams, holds eco charrettes, and provides design recommendations and analyses for these projects. Demonstrations are open to all residential building types (e.g., mixed use high-rise with market-rate condos to gut rehabs of single-family housing). The program has involved affordable housing authorities, developers, and architects in the SCG area. Specific projects have included a mixed-use, high-rise development, three single-family homes, and a multifamily attached product. The intent is to create a program option that "fits the project and gets away from the project having to fit the program."

The demonstration projects are more advanced than projects participating through the other program venues. Account Executives are usually not involved in the demonstration projects. Demonstration projects expand the program approach by allowing integrated and innovative projects. Demonstrations often include green building projects participating in other programs, such as LEED or GreenPoint Rated. They provide a venue or platform for exploring future projects and the potential for each product type. For example, high-rise housing is not the same as single-family housing. The utility is seeking a good high-rise, mixed-use project to explore future directions and elements that might be impacted. They are also expanding to cover joint utility projects that could include municipalities and municipal utilities, metropolitan water agencies, and so on.

These projects will be leveraged to disseminate information they generate. They will be marketed and showcased in the media and will have case studies developed for them.

The only disadvantage interviewees identified for demonstration projects was that industry was still not used to seeing a utility so involved and engaged in providing services and ideas at a project's early stage. To improve success of this program aspect, respondents indicated more marketing and outreach should help overcome the industry's initial response to the utility's role.

4.3.3 Prescriptive Program Component

About 200 prescriptive projects have been conducted in the SCG area. Account Executives said they each handled about 10 to 25 projects at a time, with some involved in more than 50 projects over the program's life. The Account Executives described their role in these projects as working through the process steps with participants, including:

- Presenting the program to customers;
- Working with the trade allies and site superintendents;
- Gathering needed documentation, including the program agreements;
- Overseeing and monitoring the inspection process; and
- Delivering the incentive check.

Program staff listed several advantages to this program component:

- Increased use of high-efficiency HVAC and water heating equipment.
- Promotion of Title 24.
- Providing alternatives for builders who want to participate but find the economics of the performance approach too challenging; this results in at least some energy savings.
- Participation opportunities for multifamily projects, which would otherwise find the performance approach too difficult.
- Inspections arranged and paid for by the Program.
- Increased contact between utility staff and builders.
- Educating builders about measures that may become part of Title 24 (building) standards.

On balance, staff comments suggested the disadvantages of the prescriptive approach outweighed its advantages. Prescriptive component disadvantages cited by the utility staff included:

- Less opportunity for utility staff to influence projects, which raised concerns about freeriders.
- Insufficient incentives relative to the measure cost.
- Lack of an education piece.
- Difficulty scheduling inspections during available time windows.
- Confusion created among the builders and trades because builders did not usually include energy-efficiency measures in their original plans.
- Program changes caused confusion and uncertainty among participants.
- Difficulties created when construction team turnover occurred: "Personnel changes were very problematic; there was no 'chain of custody' when staff changed, no continuity on the ground."
- Difficulties selling builders on the program because of the number of players that had to be involved: As one Account Executive noted, "For example, I had to

convince someone to do duct testing, and as part of this, I had to talk to the building contract supervisor, the HVAC contractor, and the superintendent."

- Title 24 changes in 2005 made it more difficult to participate because the bar was raised.

Utility program staff were asked whether the prescriptive approach worked better for certain housing types. Program managers noted a mix of single- and multifamily projects had participated, but it was more difficult for multifamily projects because of duct tests and QII requirements. They also noted tankless water heaters were more difficult to implement in multifamily projects because of venting needs. Account Executives did not have very strong or consistent feelings about the prescriptive approach working better in one housing type than another. Some thought it was slightly better suited to single-family homes because the incentive was relatively small for multifamily projects, and it was harder to meet requirements, such as the maximum cooling capacity and QII, in multifamily buildings. On the other hand, one noted he felt the tankless water heater option worked well in townhomes or condos and was more attractive economically.

Utility staff were asked about how the prescriptive approach could be made more effective. A project manager suggested it would be useful to go back to the energy-efficiency measure potential study to ensure market segments identified there were being covered in the program. One respondent felt quite strongly it was unlikely the prescriptive approach could be made very effective, and the performance approach was preferable overall. The most common suggestions for increasing the prescriptive approach's effectiveness were:

- Increase the incentives;
- Provide more builder education and training to the industry, especially about the energy savings benefits;
- Establish more program continuity from year to year; and
- Add measures such as hydronic heating.

4.3.4 Financial Incentives

Financial incentives differed between the prescriptive and performance program components, with prescriptive incentives based on a product installed, and performance incentives based on energy savings. Program managers indicated prescriptive incentives were designed to cover about 60% of the incremental measure cost.

Account Executives had a variety of opinions about the incentives' effectiveness. The most common response was the incentives had been somewhat effective. Some Account Executives felt it was too soon to tell for the performance component; two respondents were very positive about the incentives' effectiveness. One Account Executive provided a response setting the financial incentives in a broader context: "Incentives do help, but it's the whole educational process. Builders need to understand Title 24. Technical assistance can be provided on how to meet the requirements, but we need to educate the energy consultants as well as the builders." For improving the incentives' effectiveness, the most common response was to increase the incentive amount. One Account Executive elaborated, noting:

> "The incentives now are geared toward larger builders who can afford it; we should bring back the tankless water heater incentive for new homes…. Building costs have gone up in recent years but incentive levels have not; we should increase the incentives regularly to keep up with inflation at least. Smaller builders can't spend an extra dime; they will pursue a particular program if their costs are covered, but they don't have the financial security of larger firms."

Another respondent recommended a program change to give participants three years to complete their projects.

4.3.5 Performance Program Component

The performance program component has been based on ENERGY STAR, and utility staff were asked how effectively the program supported ENERGY STAR. Program managers noted problems occurred using ENERGY STAR because the utility's program was implemented before ENERGY STAR program requirements were fully defined in California; in particular, there was lack of clarity from EPA on the thermal bypass checklist, and many iterations were required between the California Energy Commission (CEC) and the EPA to resolve these issues. This uncertainty lowered initial participation in this component of the Advanced Home program, but managers noted the number of ENERGY STAR homes has grown considerably, as has use of the HERS rating system. The Account Executives expressed a range of views about the ENERGY STAR approach. Several noted problems caused by the thermal bypass checklist. One referred to this requirement as the "QII on steroids." Another noted this added more than $3,000 to the home cost, and the incentive was not worth it to most builders. Another commented the average builder in the SCG area did not care about the ENERGY STAR label, and the requirements were especially difficult for multifamily projects to meet. Other Account Executives' comments were more positive. One said she felt the performance approach would be easier to implement overall (than the prescriptive approach), but noted builders had to arrange and pay for ENERGY STAR inspections. Another commented ENERGY STAR helped increase compliance with Title 24, and the utility had been a strong partner with the ENERGY STAR program.

Respondents were asked what ways the program had been most effective. Overall, program managers' said the program had been effective in promoting and pushing industry efficiency efforts. They highlighted its effectiveness in educating builders and energy analysts as well as in providing information on actual incremental costs. Account Executives had mixed feelings about how the performance component had been most effective. A few felt it had really not been very effective yet. Others commented it had been effective at educating builders and the energy consultant community, especially in analyzing the effects of measures beyond those required by Title 24. Others commented it had opened up more opportunities for partnerships with builders looking for ways to distinguish their properties, and one noted the general interest in energy efficiency had increased, and the largest apartment builder in Southern California was now a program participant.

Finally, we asked utility staff how the program's support of ENERGY STAR could be increased. The program managers emphasized the need for and their plans to offer more training. One area where they felt more training could be especially useful was for HERS raters. Several Account Executives reiterated the thermal bypass checklist was a special

challenge of ENERGY STAR, and some way should be found to reduce the burden of this requirement. One respondent suggested hosting focus groups with builders to identify alternatives. Others suggested increased incentives to cover the costs of the thermal bypass checklist and other ENERGY STAR costs. Another Account Executive took a more long-term view, stating it took time to build brand recognition; so the main requirements were promotion and time to develop this awareness.

4.3.6 Education and Technical Assistance

Program managers described education and training as being provided in two ways: through Account Executives working with clients, and through formal training and workshops at the Energy Resource Center on Title 24 and efficient technologies.

Account Executives provided additional details about training delivery. Several mentioned the Energy Resource Center had provided builders with courses on lighting, Title 24 changes, ducts, and other topics. There were differences among respondents about training frequency, but most said it had declined recently, creating problems. In addition to formal training, Account Executives said they used other venues, such as the Website and distribution of special information targeted to certain builders. One noted the utility staff used to deliver some educational seminars. Account Executives also brought up internal training and how it had declined in recent years. Those commenting about internal training were concerned it was inadequate.

Managers thought training was effective and adequate for HVAC, water heating, and envelope measures as provided to engineers and consultants. They had concerns, however, about a lack of training for architects, landscapers, and other industry members. Program managers felt more could be done to integrate the design community into the program and address design issues. They felt training was effective at reaching builders, but improvements were needed in training subcontractors.

Account Executives had mixed views on the training's effectiveness. All felt training the industry was very important: though some thought current training efforts were effective, most stated effectiveness had declined in recent years because less training budget was available and fewer classes were offered. Ways recommended to improve training included:

- Send out short and simple e-mails to builders;
- Restore training funding, and offer more training classes to builders as well as contractors;
- Involve higher-level staff with building companies;
- Enhance internal training of program staff, so they are able to communicate effectively with industry leaders; and
- Develop ways to get builders away from the job site for training, so they are less distracted.

Program managers said past program technical assistance had focused on ways to reach 15% performance-based efficiency improvements and things such as meeting Title 24 using efficient water heating systems, etc., to keep incremental costs low. This has shifted

to looking at more advanced technologies, such as microturbines in the demonstration home projects.

Account Executives indicated technical assistance was usually provided through one-on-one contacts with members of the building team, sharing their ideas directly, offering internal energy analysis, and attending meetings with the client. They noted they provided little or no design assistance for at least three reasons. One was much design work was completed before the utility became involved. The second was the utility was usually not able to respond quickly enough to affect the process. The final reason was a concern the utility could be placed in the position of competing with private sector consultants. Account Executives expressed views on the effectiveness of technical assistance, ranging from "very effective" to "not effective." Limitations on effectiveness were related to lack of utility staff, thus limiting the utility's responsiveness, and lack of awareness of this utility service by program participants.

Program managers felt technical assistance could be improved the same way as training (i.e., by reaching out to industry partners beyond the builders). Account Executives suggested several ways the program's technical assistance could be improved, including extending it to designers and architects, increasing promotion of the service, providing a hotline, and (though not really a type of technical assistance) providing a design incentive to architects and designers.

4.3.7 Linkage to Broader Sustainability and Renewables Goals

We asked utility staff a series of questions related to program participants' awareness and understanding of sustainability, energy efficiency, and renewable energy, and the program's influence in this area. Program managers stated that though most had heard of sustainability and green building, few builders really understood the concepts. They observed those knowledgeable about sustainability tended to be smaller builders; within production builder firms, awareness of sustainability and green building was usually quite limited unless someone within the company was a strong proponent. Builders also had a tendency to see energy efficiency as something by itself and separate from sustainability, and few had a comprehensive understanding of issues such as low emission building products. The industry also appeared to not distinguish energy efficiency from renewables, such as photovoltaics (PVs). Though first costs were still viewed as an impediment to use of renewables, managers noted PVs and solar water heating were becoming more common, largely because of state incentives. Program managers thought more training and education were needed to educate the industry about sustainability, and industries, such as solar energy businesses, needed to be more engaged. Overall, managers felt coordination and cooperation with other organizations—the American Institute of Architects (AIA), the U.S. Green Building Council (USGBC), other utilities, etc.—had been quite effective.

Most Account Executives stated the understanding of sustainability and green building was very limited among the building community. One said: "Most [builders] have heard about 'green building' even if they don't fully understand it. This gets into the 'chain of command' thing - the people I work with may not have a good understanding, but perhaps their colleagues 'higher up the chain of command' do."

Another suggested an understanding of sustainability was more common in the non-residential building sector and, he noted, within SCG there was probably more knowledge among staff working with non-residential programs than residential programs. Another Account Executive pointed out "sustainable" and "green building" were not consistently defined, and it was difficult to communicate with builders about these concepts. Several respondents thought the industry made the link between energy efficiency and sustainability, but did not understand the broader aspects of sustainability. One Account Executive thought developers understood the link between energy efficiency and sustainability, but builders were less aware. Another said builders thought in terms of *energy savings*, not energy efficiency. Account Executives generally noted increased builder awareness of and interest in renewables, but cost was an impediment. Various Account Executives made several interesting comments about renewables, including:

- "Builders are very interested; they think it will help them sell more homes, however, they can't afford it right now. When homes start to sell again, this may change."
- "Some are doing solar energy if it makes sense financially. It's very costly. I'd like to see what the returns are in five years from a solar project; how well did it perform?"
- "Builders will install renewables only if the consumer is able to pay the extra expense. It's like a pool; it's another amenity and it comes with added cost."

Account Executives thought the Advanced Home Program had only a limited effect on builder understanding and awareness of sustainability. One observed understanding had increased because of several factors, including SCG's program, and the utility had performed an important service for the state. Another noted, however, that solar (PV) projects had to be done in conjunction with an electric utility, so SCG had less opportunity in this area. To increase the program's effectiveness in the green building and sustainability area, Account Executives offered several suggestions, including:

- Expanding technical assistance;
- Enhancing training, with an explicit focus on green building and renewables;
- Developing a program specifically including renewables; and
- Making it possible for SCG to offer a solar PV program.

Finally, most Account Executives were unaware of active coordination with green building or sustainability organizations. On the other hand, one thought coordination was excellent and mentioned receiving regular notices about meetings and events. One person expressed interest in getting more information from program managers about other activities that might affect the Advanced Home Program.

4.3.8 Program Procedures and Processes

Utility interviewees were asked for their feedback on ways that program procedures and processes might be improved. Program managers noted they had been in the process of changing the program's direction and were increasingly emphasizing the performance-based program component. They felt there had been a lack of outreach on residential new

construction; so they saw a need to increase this effort. In particular, they felt it would be important to focus marketing/outreach materials to target specific groups such as architects and HVAC contractors. To have more influence, they felt recruitment should involve getting into builders' and architects' offices earlier, and this would entail increased education of Account Executives to involve them more in these early project stages. One manager commented the program should expand to attract more builders who had not participated yet and cover a wider geographic area. Managers also felt the application process should be simplified and moved to an electronic or Web-based application. One noted: "…this will take away some field rep involvement, but field reps could do follow-up with the applicants. I'd like to reduce the footprint of the program by reducing paperwork." For ways training and education could be improved, the managers suggested there should be more training beyond HVAC systems, and keynote speakers, including contractors with special expertise, should be brought in to assist with training. They felt HERS raters could play a larger role in both training and quality assurance (QA), but they expressed a few concerns about the proficiency of some HERS raters.

Account Executives generally felt strongly that the program's marketing materials were not professional looking and needed significant improvements. One noted they had no materials to leave at model homes, and another said there were no materials reflecting changes in incentives. Almost every Account Executive recommended improving these materials to make them look more professional and current. One thought the program had done a pretty good job staying visible by being present at builder shows, tradeshows, and other industry events; this same Account Executive noted, however, they needed to start attending architect and energy analyst events. Other recommendations included: updating the Website and recognizing participants on it; providing plaques to participating builders; and implementing a joint marketing approach.

Account Executives' comments on the recruitment process built on their responses regarding marketing. Several thought more marketing would help recruitment. Providing public recognition and visible items such as plaques to certify participating builders was mentioned by several as a way to improve recruitment. There were few ideas offered on how to reach more builders, but one mentioned putting more recruitment effort with architects.

Most Account Executives felt the application process was too complex and cumbersome. Several noted they did most of the participants' paperwork to reduce their burdens and minimize application errors that would require resubmission. Though many believed the requested information was needed, some were skeptical ("were asking for stuff we don't even need"), and others thought even the "streamlined" process was too complicated and confusing. One Account Executive described the process as requiring several different sets of information, and it would be better if it could be addressed through a single application.

The majority of the Account Executives stated the program's education and training activities were inadequate. Staff felt more resources needed to be dedicated to these activities, and specific functions, such as workshops once held on lighting and other efficiency measures, needed to be reestablished. In addition to external training/ education, several Account Executives indicated more should be done internally to keep them up to date on the program and provide sufficient time to learn about upcoming program changes, so they could inform the builders effectively.

QA appeared to be a uniform concern among Account Executives. Most comments centered on the performance of companies doing the verifications and HERS ratings. One person noted several concerns, including: "…they [the HERS raters] don't do a good job of tracking schedules; they don't always have the best internal management; and they are hard to calendar and could miss a verification." Ways suggested to improve this issue included hiring different companies to do verifications, improving communications, and making coordination between the utility and the verifiers better, hence reducing potential conflicts.

4.3.9 Other Observations and Recommended Program Enhancements

Observations

We asked program managers and Account Executives for any additional overall observations as well as recommendations for enhancing the program. One respondent saw the utility as playing an important role in helping the building industry make a change, and that, ultimately, the regulatory bodies would be involved; so it was crucial to work with regulators to promote the program and make it succeed.

Several respondents emphasized the importance of working closely and communicating clearly with builders. Specific comments included:

- The program has done pretty well at providing resources; targeted market segments and community-wide development now need to be addressed.
- The measure approach was very effective at helping builders prepare for Title 24 changes; the performance (ENERGY STAR) approach may not be as effective at achieving that outcome.
- The program needs to become involved in projects earlier in the design process; so it can have an influence before major decisions are made.
- With the building market slow, builders are looking for more and better marketing materials, which the program could provide.
- Recognition of participating builders (e.g., by providing a plaque), would help recruit builders and promote the program.
- The program appears to favor larger builders as they tend to be able to better afford added costs and program outreach through the major builder associations, which may exclude smaller builders.

Recommendations

Interviewees provided a range of program recommendations. They are summarized below by category.

Demonstration Projects

For the program's demonstration component, program managers recommended expanding the scale and making the program design flexible enough to meet the projects' needs instead of restricting projects too much to meet program needs.

We note many of the issues identified for other program venues (e.g., the need for early utility involvement in the design process, flexibility, etc.) appeared to be addressed by the design of the program's demonstration component. We believe it will be important to ensure lessons learned from the demonstration projects are effectively leveraged and communicated to enhance other program components.

Marketing and Early Involvement

Several respondents noted the program could not have much effect on projects if participants enrolled after project designs and plans were completed. Consequently, several recommended the program find ways to become involved in new projects earlier in the cycle. One way to further this goal would be to increase contacts with designers and architects.

Given the common perception that program marketing materials were inadequate, several interviewees recommended improving these materials. In general, respondents thought materials could be more professional looking and well thought out.

Incentives

Numerous staff members recommended changes to incentives to increase participation and program effectiveness, primarily:

- Provide incentives to fund energy analysts (rather than the utility providing free energy analysis internally). This would lead to better customer service and relationships with the energy analyst community.
- Provide design incentives for architects and engineers (this was being developed while our interviews were being conducted).
- Increase incentive amounts.
- Provide new or bring back prior incentives; examples include solar technologies and tankless water heaters.

Services

Two related recommendations were made about services the program should provide. One was in the area of technical and design assistance: the program should offer both more design and technical assistance. We note, however, some respondents were concerned this might raise objections among consultants who were already providing such services to builders.

The second service recommended was providing tools to allow builders to quickly estimate and demonstrate energy and cost savings as well as added construction costs, from building to program requirements. Though a concern was raised about possible liability issues if estimates were not completely accurate, such tools would meet an important program need; one Account Executive said: "This is one of the biggest things we're missing."

Program Design

Several program design changes were recommended, ranging from fundamental design and program scopes to targeted changes.

At least two interviewees commented the program's greenhouse gas benefits should be analyzed and highlighted. One commented: "Let's not debate it; let's do it." Along the same lines, one noted sustainability and "green" program should be emphasized.

Other recommendations addressed ways to make the program more flexible and efficient. One person said red tape should be reduced. Two people suggested builders should be given the flexibility of qualifying some of their homes in a project rather than requiring all their homes meet the program requirements. Another recommended offering measures-based and performance-based programs simultaneously; so builders could choose their preferred approach.

Internal Changes

A few recommendations were made about ways to improve the program through internal changes. Some Account Executives thought they should be responsible for fewer builders and projects so they could devote more attention to each.

Following on several comments discussed earlier, there were recommendations to improve training and knowledge of Account Executives, so they could be better prepared to inform builders. They also thought it would be effective to educate the builders' sales force, so they could communicate the advantages of green buildings to clients.

Finally, a few Account Managers noted it would be beneficial to improve some aspects of internal communications (e.g., it would be helpful to know more about program managers' activities and likely program directions). One Account Manager stated: "I think the program managers asking Account Executives for our input [through these interviews] is very valuable."

4.3.10 Green Buildings, Program Awareness, and Decision to Participate

Builders in the Irvine group were diverse and expressed a range of views on building green, the program, and the decision to participate. Builder 5 said their multifamily projects were all rentals, and this posed some unique problems. They typically develop, then own their rental properties; he suggested that first cost was most important; so if the tenants pay the utility bills, his company would be less likely to invest in energy efficiency and green features. He noted specific concerns about green features in rentals such as low-flow toilets clogging and requiring more maintenance on their part. He was concerned there was no LEED rating system for multifamily buildings. He felt also many jurisdictions were getting in the act of requiring different things under green programs without really knowing the consequences. He elaborated that green programs, such as LEED Residential, sometimes missed the big picture, such as giving credit for things requiring purchasing materials produced outside the local area. He alluded to a problem that became a theme throughout the discussion: the conflict between local aesthetic requirements and green building practices, such as using light-colored roofs.

Builder 2's projects are primarily university housing for both students and professors. Their market is unusual in several ways. Costs are not very constrained, though they have to make faculty housing affordable for professors moving from other states. There is much interest on the their clienteles' part concerning green buildings, and they commonly put in tankless water heaters, solar panels, and bamboo flooring. He noted: "Universities aren't willing to pay any more, but they want to be able to say they are green. It has some PR pop for them." He also commented: "I agree with [Builder 5] though, it's hard to tell now what really is green. It's hard to separate fashion from reality and right now we're going through a fashionable period with greenness." He noted cost was a factor, and they had found creative approaches to deal with added costs, such as offering to build a local club a new building if they contributed half their land to a new housing project.

Most builders could not remember how they first got into the program since they had been involved with utility programs for so long. The general observation was building energy-efficient and green homes had pretty much become part of their standard practice, even though there were some specific problems (mentioned later) in participating in the program.

4.3.11 Program Procedures

Recruitment, Marketing, and Marketing Materials

Builders in the SCG area usually said they were recruited to participate by their utility account representative. Builder 2 said he first learned about the program at a tradeshow, then the utility rep followed up. Observations about account representatives varied. Builder 3 said his rep had been very helpful and had even sent Weblinks on things like testing the air conditioner system, but Builder 5 commented: "I never got those emails. That would be great. If they were to give us information when new things came out that would be great. I would like to bone up on the information a little, but if they were to contact us every once in a while when new things come out, we would like it."

Several suggested some momentum toward energy-efficient and green housing had developed in the market. For example, Builder 2 stated: "It's become one of those things that, at least in California, you just check into as a builder." Another said, "Very often you're already doing it; it's just taking advantage of something you've already done."

When asked about program marketing and marketing materials, two of the builders commented their sales people would not allow the utility marketing materials in their show rooms. When probed about reasons why, responses were less about the quality of the utility materials than it was hard to sell energy efficiency or green buildings. One builder commented: "Marketing anything but our own stuff is usually not going to happen." Builder 2 stated: "It doesn't sell, there isn't much of a market. There's not a lot of sex and sizzle to it. Trying to tell a market about ENERGY STAR is like trying to sell safety in a car in the 50s. Safety didn't sell. Great idea, we ought to keep doing it, but it doesn't get much traction from a marketing standpoint." The same builder, however, noted one of their main markets, university professors, was much more receptive.

These builders brought up other broader concerns about marketing that could impact program marketing. Three noted that as things change, including program features, marketing materials would have to be changed because, as Builder 2 stated: "The buyer can sue now and force you to put it in, if you have things in your ads you can't give anymore." As Builder 3 put it: "The more specific you are the more trouble you're in. For brochures, you have to keep it as generic as you can."

Program Application Process and Energy Analyses

Experiences of the builders with the application process varied. One said the account representative filled out the application for them, but another said he had to do it by himself. No builders indicated the application process was difficult.

Builders were either unaware of energy analyses requirements or said their staff or consultants—and not the utility—had performed them. Builder 5 said: "The problem is the [energy] trade offs—would you rather do this or that?"

Incentive Process and Verification

When asked about the program incentive process, one builder summed up the group's view when he said: "The process of getting the rebate is very easy. We just turn it in and they [SCG] take it from there." The other builders concurred.

Additional comments about the incentives' role provided useful insights into their effectiveness. According to one builder, with: "[Our accounting practices] we spend our money in the directs … we charge it to the house, but when this money comes in, it doesn't get reimbursed to the house, so all you ever see is the out-of-pocket cost, and it's never offset by the rebate. Somehow this just goes into one big fund. It's painful for us back on the job to site to put something into the house and the buyers…don't see how it is offset by a rebate. The costs are going up and the rebate isn't coming back to offset it." Another observed: "Unfortunately, the way accounting works with a lot of builders is when you get money back, it doesn't happen right away, so the savings aren't recognized right away." This disconnect between rebates and home prices appeared to be related to the accounting practices of certain builders. As another builder stated: "We go after any rebate. In fact we forecast the rebate, so if it doesn't show up, they look for it. For a long time, we didn't track this, but now we have to. Our rebate program [including utility and supplier rebates] gets over a million dollars with everything combined. We go after any rebate."

The Irvine group builders had some concerns about the AHP verification inspection process. In general, their comments were more about the growing number of different inspections, with the program imposing one more. Builder 2 commented:

> "To the extent we get into more and more inspections, it just bogs us down. Right now, we actually have six inspections, between the universities, insurers, the state, etc. There is a difference between who does Title 24 and what the gas company does to respond to that. There is a point that you just strangle the process. It's not just the inspections themselves; it's that everybody is getting in the act – your insurance inspector, third-party inspector—you still have your team, your

> architect, and engineer going through it. You could invest a bunch of money and then barely meet Title 24 after investing all that money. So sometimes you just say I'm not even going to participate, I know I'm Title 24 compliant."

Other builders concurred with these observations. Builder 1 emphasized the problems inspections were creating for them:

> "We have to schedule these things to come out on the jobs and it gets a little hectic.… They [the inspectors] keep trading it off to another company to do it, who will trade it to another to do it, and so on. If the company couldn't handle the work load, they would have to pass the inspection jobs on. The inspections are part of the Advanced Home Program. We would try to schedule them for the day we need them, and they would say they wouldn't be able to come for a week out, which is too long on the job site."

Builder 3 provided a positive observation about inspections for insulation and duct testing required under the program: "I liked that they [the utility] went in directly and checked this guy's work. Now when he has to pass certain testing, it gives me a real good indicator of someone's work. It may slow up the production process at the beginning, but with a little extra money to the owner, we can give back some that is lost." Builder 5 noted the inspections had become more problematic as the program changed: "The gas company used to provide inspections, now we have to pay for it and it's contracted outside. I'd rather have the gas company do that rather than have to go deal with it. When we try to get a quote from them, it takes them a long time to get it back, when they have already been doing it with the gas company, so it should be easy for them to do quotes.… Because our margins are so thin now, duct testing is causing us a wash and the insulation is costing us money; sooner or later we're going to decide it isn't worth it."

4.3.12 Program Services

Builders were asked about their perceptions of services the program provided in areas of education, design/technical assistance, and financial support.

Overall, responses about program education and training indicated potential confusion or a fairly high lack of awareness. Builder 5 said he was unaware of any green building education through the program. Another builder indicated one person in his office had attended training, but, suggesting this type of training was not directly relevant to builders, stated: "All the design issues, we leave to the architect. It isn't a mandate for the rest of us. I want twelve and a half per acre; we ask the architect to make it work." Builder 3 said he had been to a utility training session and commented: "It was handy, but it's been quite some time since one has happened that I know of. If your [utility] rep is contacting you about these, it'd be nice." Another builder said the trainings were listed on the CEC Website.

Builder 1 noted, with the slowdown in the market, he was receiving a lot of training, typically two sessions per week. This suggested now might be good time for the program to ramp up training and education.

One exchange highlighted the potential for confusion about design/technical assistance provided by the program:

> Builder 2: "[The utility] will give you guidelines on the energy envelope in terms of overhangs and things you can do that are passive."
> Builder 4: "I've never had that experience with the gas company. It's always my Title 24 guy."
> Builder 2: "Maybe I'm wrong as to where the source is right now. I always thought it was the gas company."

Builder 2 noted they could use design and technical assistance whether it came from SCG or a consultant. Builder 4 said the HERS raters were providing similar assistance as a complementary service with their ratings.

A lengthy discussion resulted when we asked whether the program's financial support helped builders try costlier, green/energy-efficient technologies. In general, the builders felt Title 24 had gotten so tight that going beyond it to meet program requirements was too challenging and hardly worth the incentives. As one builder put it: "The latest revision to Title 24 basically knocks the slacks off a whole bunch of efforts we thought were really slick, that now just meet the grade. It was an incentive at one point, now it's just what you have to do to meet Title 24." Another builder commented: "If you put tankless water heaters in six houses, how do you get enough incentive money to pay for those. The incentive money is nice because it covers some extra costs, so it's nice to have it as a pad. It is nice that it covers your trades. But you never really make money on it or anything."

4.3.13 Program Effectiveness and Effects

To get builders' views on the program's effectiveness and effects, we asked about four program components:

- Demonstration projects: emerging technologies and low-impact construction practices.
- Support for the ENERGY STAR homes label.
- Prescriptive measures: maximum cooling capacity, verified duct systems, Quality Insulation Installation, and high-efficiency water heaters.
- Industry education on Title 24 changes and technologies.

We also inquired about the program's relationship to other programs, changes in their building practices, and different housing types.

Demonstration Projects

When we asked the Irvine builder group if they had done demonstration projects under the program, none were aware of this program component.

ENERGY STAR

When we asked the Irvine builder group about the program's ENERGY STAR component, some confusion ensued. One builder commented: "That's the Edison program. It's not what the gas company does." Builder 2, however, said SCG and Edison both had ENERGY STAR programs, but: "We have only participated in [the gas company program] and it's the 15% target we have aimed for. This is how we decide how we're going to do this and that measure."

Builders found meeting the ENERGY STAR requirements challenging because of increasing requirements of Title 24. One builder said they had initially planned to exceed the code by 35%, but, by the time they got through the process with the new Title 24, they were not even 15% better than the code. Builder 3 said the different requirements of climate zones made it difficult to meet ENERGY STAR requirements: "The climate zones have a lot to do with it. It was so much harder to reach the next level. Since it took so much effort to get to the next level, it wasn't worth it. If it had a strong marketing ploy, it may be worth it, but it doesn't have that pull." Overall, the builders felt there was fairly good awareness of the ENERGY STAR brand, buyers: "…are more interested if it's got a granite counter in the house than what kind of water heater it has." Generally, they felt awareness was there, but the value had not been adequately communicated. Builder 1 said: "Some buyers recognize ENERGY STAR…. They've picked it up at their work or from someone else, not because it was actually advertised. If there was a TV ad, telling them to make sure your builder does this, then I could see them wanting it." Builder 5 noted there were special problems trying to justify the added costs in rentals.

Prescriptive Measures

Builders provided feedback on the prescriptive program component. Builders 1 and 3 saw benefits in the prescriptive requirements coupled with inspections, leading to better quality work by their subcontractors. Builders who had participated in the prescriptive component said they had no concerns or issues related to it.

Education on Title 24 Changes and Technologies

When we asked builders whether they were receiving education or training through the program on Title 24 changes and technologies, none said they were. Builder 2 said: "They [the utility] seem kind of behind the changes. [It would be helpful] if [the utility] were to be like, 'Oh yeah, it's getting tighter, it's getting tougher, you need to look at this, this, and this, as cost-efficient ways to meet the new standard,' instead of just saying all the things you have to do."

Other Effects

When asked whether they had applied any of the measures they had implemented through the program in other geographic areas, none of the builders said they had: "It's too expensive; people won't pay for it." We asked about the overlap and coordination with Southern California Edison's (SCE) program. Builder 3 said a housing project used one utility's program or the others, but not both. Builders noted some synergies with local government programs. For example, a few local water districts had programs providing

credit for reducing water consumption and some appliances (e.g., ENERGY STAR clothes washers) received credit under the AHP too.

Generally, builders felt it was harder to meet program requirements in multifamily buildings than single-family units. In addition to the first-cost issue, builders found it difficult to install tankless water heaters in multifamily buildings: "If we go to a tankless water heater, it's really expensive, and the exhaust goes to the side of the building which doesn't quite work for us." None of the builders yet had experience with high-rise buildings, but one said he thought the challenge would be meeting the glazing requirements.

When asked about doing mixed-use projects under the program, one builder who was trying to do a project said the utility review had been dragging on for a long time, and he did not know the outcome yet.

4.3.14 Los Angeles Area Builder Interviews

In lieu of a focus group, we contacted four Los Angeles area builders by phone and conducted short interviews. These interviews utilized a modified version of the focus group interview guide and collected feedback on the same aspects of the SCG AHP.

The builders surveyed included staff from: Shih Lin, Los Angeles Community Design Center, Beyond Shelter, and Shield and Turner Homes. These builders represent a single family custom home builder, two organizations that utilized the Program for low-income housing, and a developer of single-family homes and multi-family buildings. One of the project managers surveyed was relatively new to her position and, therefore, did not have much information to offer on aspects of the program outside the verification process.

The builders surveyed by phone had discovered the program through a couple of different methods—one from the *Flex your Power* Website, one from a meeting hosted by the City of Los Angeles, and another through an SCG Account Executive. The staff interviewed had different reasons for participating in the program. One indicated that a home design they were considering had already included tankless water heaters. He then met the SCG Account Executive who indicated the organization could apply for a rebate to offset the costs. Another builder said their business participated because the requirements improve the quality of the homes and provide certification that the homes meet that standard. One builder that had utilized program support for a low-income housing project said "… every dime helps on our low-income projects…"

The views expressed about the SCG Account Executives by the three respondents who had been recruited into the program were all very positive. One remarked that her Account Executive was easy to contact, returned calls quickly, and was always very helpful. Another respondent indicated he would not have participated in the program without the encouragement and help from his Account Executive. The three respondents that had completed program applications all stated they had assistance from their Account Executive.

The respondents were asked to comment on the different offerings under the AHP. Two recalled the program marketing materials and both indicated they were useful, but not eye-catching. The three respondents who had experience with the program from the

beginning of their project indicated that no energy analysis of their projects had been completed by SCG, nor had a complete energy analysis been offered. One respondent, a director of architecture, contrasted the availability and assistance of Southern California Edison in their design process with the lack of support from SCG in that regard. Outside of SCE territory, he claimed the organization was "flying blind" and depending on their past experience to guide them.

All four respondents had experience with the verification and incentive processes. The comments on the verification aspect of the program varied between the builders. One was very pleased that SCG tracked her building schedule and called to remind her when she would need to have a verification. Another builder described a very similar positive experience. The other two builders, however, indicated that verification was a difficult process. The larger developer felt it was hard to coordinate verification with the construction process; there were too many different inspectors; and ultimately his business decided to forego the insulation rebate because the verifiers had missed the opportunity to inspect it before the drywall was finished. The last builder, a smaller company specializing in custom homes, indicated that verification for him was difficult because he is so often out in the field and is not able to return to the office to check e-mail and voice mail frequently. This builder also indicated that some of the verification requirements for the quality insulation installation rebate run counter to the method used in most construction. The only feedback received directly on the rebate and incentive process was that the dollar amounts were so small it did not make sense to have the rebates issued in pieces over the life of the project; he would rather have the total rebate amount issued at project completion to save his staff's time.

Only one of the respondents knew of the education offered through the program. He appreciated the one opportunity they had to receive training, but would like additional education on meeting SCG standards for rebates and incentives. All others indicated they would appreciate any education and training the utility could offer.

The builders were asked to comment on the financial support of the program and whether it increased their ability to make a project more energy efficient. The financial incentives were deemed too small to be of much significance in exploring other technologies by two of the builders. In the low-income housing projects, the construction standards already require many of the energy-efficiency improvements—the support of the utility just makes the projects a bit less costly. One builder that focuses on custom homes said that sometimes the incentives will make a difference to a home owner, but many are very difficult to sell, especially the ENERGY STAR homes. This builder felt the incentives should be increased to cover more of the incremental costs for energy-efficient upgrades.

At the end of the survey, all respondents were offered the opportunity to give any additional comments about the program. One builder, who had incorporated the program into a development, said he had wanted to do a joint press release with SCG advertising that those homes had met AHP requirements. He felt the opportunity would have been beneficial both for the development and for the Program. However, SCG ultimately denied his request and he was very disappointed.

4.3.15 Suggestions for Improving Program

The most common suggestion Irvine group builders made for ways to enhance the program was to provide participants with additional information to help them choose how to meet program requirements. In general, builders suggested they lacked knowledge about measures required to comply with the program. Builder 5 said the utility should analyze the costs of the measures before they required them to ensure the builders could pay for them. Builder 2 noted he needed an appropriate metric to evaluate different options. He went on to clarify that it would be very helpful if the utility could provide answers to three questions: "Can I get it locally? Do I have to ship it? What code challenges can I run into with it? That's all stuff that for the builder to learn by trial and error gets very expensive." Builder 2 also said he does go to the SCG Website, and it provides him with good information. He uses this information to ask his structural engineer the key questions. Builder 3 said it would help being provided a breakdown list of companies and products that are the best options.

Builder 1 felt the utility could take advantage of the construction slowdown and do more training. He suggested the utility "train the trainer."

Builder 2 provided several observations about how the program could be made more effective:

> "The program should create value in the eyes of the consumer. If people saw [the program sticker] and it meant something. Any cash we can get back is just fine, but don't kill us with all of the inspections. Make it as turnkey and modular as you can. Think through all the problems, we don't need a lot of choices, just a metric that we can measure by, and then make sure that it applies. Makes sure it works in the building envelope I am working in. Then disseminate that information on the Web. Also, send us an update when new things are posted on the Web because I don't just periodically check."

Builder 3 reiterated the need to keep builders informed about any program changes. He also stressed the need to minimize disruptions to the construction schedule.

Other comments highlighted the need to deal with potential conflicts with local codes and other programs. As Builder 3 said: "I can go to a more energy-efficient roof as any engineer will tell you. If you go to a reflective roof, you'll save energy, but it's not in the city's color scheme."

One builder commented the program needed to enhance the outreach and training: "I don't have the impression that really [the utility] is pushing or teaching me to be more efficient." Other builders noted they had been provided training on their accounting system through a Webinar, and that should be considered in the program. Builder 5 said: "They should have some kind of demo on the Web where you could pick what you need. Where if you know the stuff already, you could move on, skip the things you know, go at your own pace. You could show it at a conference room if you wanted to or just use it when needed." Another builder agreed: "I need it at a certain point in time and a class might not be offered then. I'd certainly spend time doing it when I need it."

Builders also suggested more direct contact from utility staff. Builder 1 said: “I’m really surprised that in the field, someone in program management doesn’t come out and say, ‘Look this is what we can do as a builder. You can use this unit or do this and look how much you can make on these rebates.’ The rep should already have this figured out. When you leave it to a project manager to do the research, they don’t have a lot of time.” Builder 2 made a similar comment about the inspections process: “Someone should be meeting you half way with the information. Already done all their homework and stay on top of how much you get back if you do this, and all of that.”

5. CONCLUSIONS AND RECOMMENDATIONS

Based on the interviews and focus groups we conducted, several consistent themes emerged that helped define recommendations for ways to enhance the programs. Our conclusions and recommendations are presented below by program We also note these observations are based in part on experiences of builders who participated in the program one or more years ago, so some of the recommendations may have already been implemented or are underway. In these cases, conclusions from our research can further justify such program revisions.

5.1 Savings By Design Recommendations

5.1.1 Early Energy Charrettes

There was widespread agreement with one of the fundamental goals of SBD, that intervention was needed at the earliest possible stages in the project in order to be most effective. Despite this, there were many examples cited where the owner and/or architect had made fundamental design decisions that had substantial energy implications, before the SBD energy efficiency involvement had occurred. Engineers, especially, felt that most of the options they could have recommended were no longer applicable by the time they were consulted. This led to the suggestion that SBD push owners to convene an energy design charrette[1] at the earliest possible moment in their project development. This charrette would be attended by the owners and the full design team, including the mechanical and electrical engineers, as well as by a team of nationally recognized energy efficiency experts. The objective of the charrette would be to review all of the potential energy efficiency aspects of the project, and to explore all feasible, "out-of-the-box" ideas at an early enough stage that they could conceivably be incorporated into the project. The process could last from a half-day to perhaps three days, depending on the complexity of the project. Such a charrette would be paid for by the SBD program. Although this would pose some risk to the program, because not all projects progress to completion, it would be the only way to push many projects beyond the "business as usual" approach to design. Clearly not all owners would be interested, but for those who are, the charettes could be dramatically influenced toward much higher levels of efficiency.

5.1.2 Push High Efficiency, Not LEED

The highest incentives are paid for participation in the Sustainable Communities (SC) program provides an additional 20% incentive for buildings that exceed Title 24 by 20% and achieve LEED certification. As observed above, many participants were skeptical about LEED and its value, yet they all acknowledged that higher levels of energy efficiency were valuable. This led some to question why the utility would make LEED

[1] Charrette: An intensive design process that involves the collaboration of all project stakeholders at the beginning of a project to develop a comprehensive plan or design

certification a requirement for higher level incentives, rather than simply providing higher incentives for higher efficiency. They could understand a utility pushing for higher efficiency, but were less clear why a utility would push for the other sustainability goals of LEED. Also, as much of this discussion took place in the context of the Sustainable Communities option, we note that even experienced participants confessed confusion about the relationship/distinction between SBD and SC. This confusion is counterproductive; either the distinction needs to be greater or one of the program names should be abandoned (probably SC).

5.1.3 Expand Credit for Unconventional Efficiency Measures

The more energy-sophisticated participants were aware of many of the limitations of incentives tied to Title 24 requirements. Because T-24 is built around code compliance, there are a number of measures that affect building efficiency that are not allowed; measures that are subject to gaming, measures that may not be reliably enforceable, measures for which a baseline is difficult for a code official to verify, etc. Examples of this include building orientation or massing changes, lack of air conditioning, inclusion of improvements in outdoor lighting or unconditioned space, co-generation, etc. The existing ACM simulation tools do not readily accommodate many measures that could save substantial amounts of energy. As SBD becomes increasingly ambitious, it may become necessary to update the analysis methods to credit measures that lie outside the T-24 compliance domain. There are no technical reasons this could not be accomplished within the CA evaluation context, provided the savings credits are well documented and defensible, but the practical issues would need to be thoroughly addressed to ensure reliable savings and to prevent gaming.

5.1.4 Establish Track for Cutting Edge Projects

Currently, the Sustainable Communities program is the mechanism established for demonstration projects. Some of the designers, however, suggested that there be a track specifically established to encourage cutting edge projects that significantly diverge from conventional energy efficiency solutions, and which could demonstrate substantial new opportunities for advanced energy efficiency. The projects would likely be smaller scale projects with committed owners, but this option might help to point the way forward for the next level of efficiency.

5.1.5 Provide Early Design Team Incentive Payment

Despite the ambivalence toward design team incentives discussed in the previous section, most designers value them and would like to have them earlier in the design process. Currently, the only way a partial design team incentive can be paid earlier than the project completion stage is under the Sustainable Communities option, which requires very aggressive efficiency levels and LEED certification. Because the typical design team incentives arrive so late, often years after the extra design effort was expended, the link between the reward and the behavior it encourages is lost. Reluctant designers may not even view the incentive as interesting. If it were easier for designers to receive a portion of the incentive earlier, it would likely be more influential and give SBD a more prominent role in their projects. Of course, there's greater risk to the utility that the project will not proceed and the incentive would be "wasted", but this risk may be offset

by the greater interest and influence the program would engender in the design offices. Any losses could be offset by higher savings levels and/or greater SBD influence on other projects.

5.1.6 Encourage Public/Private Partnerships for Renewables

The school districts represented in the focus groups described a variety of budgeting constraints that make it difficult for their projects to go much beyond code, especially if substantially higher capital investments were needed. One of them described a public/private partnership for photovoltaics on their facility rooftops. It involved the district essentially leasing its roof area to a private investor, who paid for and operated a PV system. The school district shared in the energy savings dollars, and the investor was able to take advantage of the depreciation and tax credit incentives for the PVs, which would be wasted if the school owned the system. The utility could build upon this sort of innovative financing model, by actively encouraging and facilitating it to produce greater savings and renewables than would otherwise be possible.

5.2 Advanced Homes Recommendations

5.2.1 Program Components

Both builders and utility staff indicated there were confusion and uncertainty about the different components of the program: case study projects, prescriptive measures, and ENERGY STAR. One issue was that the emphasis has changed over time, and this has created confusion among both builders and Account Executives charged with informing and recruiting participating builders. Many builders were not very familiar with the overall program name—Advanced Home Program. Most, however, were familiar with the ENERGY STAR name and felt their buyers were also. A few mentioned LEED and associated it with green and energy-efficient homes.

Several respondents liked the flexibility of different program offerings though. Given the challenges posed by ever-more stringent Title 24 standards, many builders were discouraged by the difficulty of exceeding the standards by any significant amount.

To address these issues, we offer the following recommendations:

- **Institute more continuity in program offerings**: Establishing a program label and requirements that are fairly constant and predictable over several years would likely increase participation and builder commitment.
- **Leverage ENERGY STAR and LEED**: ENERGY STAR is well recognized among both builders and consumers; LEED is becoming better known among builders. Consider providing a range of ratings (such as ENERGY STAR and ENERGY STAR Silver, Gold, and Platinum) as ways to recognize various efficiency levels and leverage the LEED terminology.
- **Continue to offer prescriptive options**: Although simplification would justify reducing program options, the flexibility of a prescriptive program

component could increase participation by bringing in builders who are unable to do comprehensive efficiency upgrades. A prescriptive option could be used to target specific measures that would be considered for future Title 24 revisions.

- **Enhance demonstration/case study program component:** These projects provide a vehicle for promoting and demonstrating advanced technologies and innovative designs. They should continue and, where possible, be linked to other programs (such as municipal green building programs or programs like Sustainable Communities) that address broader impacts (e.g., water usage) and less commonly applied technologies. The information from these projects should be well documented (e.g., in case studies) and both utility staff and outside parties should be informed about their progress and results.

For the program's demonstration component, program managers recommended expanding the scale and making the program design flexible enough to meet the projects' needs instead of restricting projects to meet program needs.

5.2.2 Program Processes

The most prevalent concern about program processes involved marketing and recruiting activities. Most respondents either felt the quality of program marketing materials was not very good or they were not even aware of any such materials. Participants typically became aware of the program through Account Executives, but contacts with Account Executives had been fairly erratic or inconsistent for some builders in the recent past.

Based on the observations provided by utility staff and builders, we recommend the following:

- **Program marketing materials should be improved:** Focus groups should be held with builders and their sales staff to identify the best type of materials to provide, the most effective content, and the preferred messaging. All materials should be at a quality level comparable to other professional marketing directed at builders and home buyers. The program Website should be reviewed and modified to increase its usability.
- **Participants should receive recognition:** One frequent builder comment was the need to communicate the value of participating homes to buyers. Plaques for program homes or for participating builders to display could be useful for promotion. Recognition of rental properties in the program could help overcome the first-cost hurdle by informing renters their utility bills could be lower. The utility should consider recognizing participating builders on the Website.
- **Account Executives' role in recruiting and marketing should be enhanced:** Account Executives are the main avenue for recruiting participants, but it appears turnover and other factors have disrupted their ability to work with potential participants. It may be appropriate to increase the number of Account Executives, so each can spend more time with fewer builders to work through participation issues, fill out

paperwork, etc. Also, the training and timely program information they receive should be increased, so they can keep their customers up to date on program features.

- **Coordination with other organizations to market program should be expanded:** Efforts to work with organizations such as the CBIA, USGBC, and others that reach a large number of builders should be enhanced to leverage their connections to recruit builders. Joint marketing with builders should be explored.

Several builders commented on the inspection or QA process. Many noted the program added to a growing list of inspections their projects were subjected to. Although we do not believe program QA inspections should be dropped, we recommend steps to make them more effective and less burdensome:

- **Enhance Account Executive involvement**: Account Executives can provide useful continuity with builders by participating in QA inspections. Also, the Account Executives' effectiveness can increase if they learn more about the inspections.
- **Minimize the burden on builders:** Inspections can take time away from construction activities; so it is important to be flexible in scheduling them and sticking with a schedule. Having more staff available to conduct inspections could help meet these needs. Also, to the extent reasonable, the process should be relatively collaborative.

5.2.3 Program Services

Builders and Account Executives considered program incentives to be relatively important, and they appeared to be increasingly important now that the housing market has slumped and builders are cutting their costs. On the other hand, participating builders interviewed typically did not say the incentive amount had to be very large for them to participate; as long as they could nearly cover their added costs, most thought they would want to participate. Utility staff noted that if the incentives became too large, they could affect program cost-effectiveness. Based on the comments received, we provide the following recommendations:

- **Incentive amounts should be reexamined, taking into account current market conditions:** Builders face a significant market downturn that could justify a short-term increase in incentives. Incentives should be examined, given recent trends in construction costs.
- **Provide incentive options for architects, designers, engineers, and energy analysts:** These industry members are key to helping builders select energy-efficient measures and incorporate them in their designs. Special analyses to examine additional measures increase design and analysis costs; so incentives for these activities could increase participation.[1]

[1]We understand the utility was working on adding such incentives at the time we conducted our interviews.

Most respondents noted several shortcomings in training and education. Many said they were unaware of recent training. Most interviewees felt training and education could be used effectively to improve the program. Thus, we offer the following relevant recommendations:

- **Ramp up industry training and education while the industry is slow**: The slowdown appeared to be a good time to develop and offer training on selected topics.
- **Develop training modules available online:** Specific training modules builders and others could access through Webcasts or at any time of their choosing would reduce travel costs and schedule disruptions.
- **Focus training on benefits and costs of efficiency improvements:** A common concern builders expressed was a lack of understanding about the benefits of efficiency improvements required by the program. Similarly, many said they were unsure what the most cost-effective ways were to meet program requirements.
- **Provide training on compliance with the thermal bypass checklist**: This ENERGY STAR requirement appeared to be a major obstacle for builders, but it is required to achieve ENERGY STAR energy savings. Programs and materials should be developed in conjunction with the industry to train builders and contractors on how to meet the requirements most cost-effectively.

As noted earlier, one of the most commonly requested services was a tool that builders could use to compare different ways of meeting the program requirements based on energy savings and costs. Many builders said they did not know where to start comparing different ways of meeting the requirements. In addition, there were other suggestions for types of information builders would find useful. Based on comments from the builders and several Account Executives, we provide the following recommendations:

- **Produce information on comparative costs and energy savings of alternative measures:** We suggest the utility work with the industry to determine the most useful format—for example, standard tables or calculating spreadsheets—for providing this information. Research would need to be conducted to compile cost ranges and energy savings of various energy-efficiency options. This information would need to be regularly updated to stay current.
- **Provide a list of resources and contractors:** Several builders said a list of information sources and contractors who could provide services required under the program would be very helpful. This could be provided on the program Website. Suitable screening processes and disclaimers would be required as would a process for removing resources and contractors from the Website.
- **Provide access to a hotline:** Various other energy-efficient and green building programs have developed hotlines for program and technical information, and they are usually well used. The utility should investigate

the costs of providing such a service or linking into a similar hotline provided by another entity.

Several builders and program staff said technical and design assistance was needed. The utility had provided some limited technical assistance in the past, but this service had declined. Our recommendation in this regard follows:

- **Provide additional technical assistance and limited design assistance:** The utility may have staff capabilities to assist builders with technical issues related to meeting program requirements. Account Executives could be more effective if they had training in technical issues or could link customers to utility employees or consultants who could provide the required assistance. The utility should be able to respond to designers and architects to provide access at least to limited design assistance.

5.2.4 Communications

Several respondents identified types of communications that should be enhanced to improve the program. Based on these observations, we make the following recommendations:

- **Outreach to architects, engineers, and HVAC contractors should be increased**: Historically, the program has not reached out to broader groups in the residential market. Communicating with architects, engineers, and a range of contractors could help promote the program and improve participation and performance.
- **Communications should be more timely**: Given expressed concerns about frequent program changes and lack of builder awareness, greater effort is required to inform program target audiences about program changes. One option would be, whenever the program changes, sending emails to all past and current participants and to builders on lists developed by Account Executives.
- **Internal communications should be frequent and timely**: For Account Executives to be most effective, they need to stay current regarding program features and likely changes. Regular meetings with program managers and frequent internal electronic postings among all program staff would be useful for sharing lessons learned and new information that might affect future directions.

6. APPENDIX

6.1 Nonresidential Staff Interview Guide

The purpose of these interviews is to give Sempra directly-applicable information on:

- Which existing services and potential new services are most highly valued
- Where improvements should be made.

The questions are designed as open-ended. This is an interview guide and not a survey, so the interviewer should explore additional relevant topic threads that interviewees may bring up. The interviews will also give Savings By Design staff an opportunity to give their frank opinions, anonymously, to the evaluators.

6.1.1 Introduction

Hello, this is _____ from the Heschong Mahone Group. I'm calling to ask you some questions about Savings By Design, which should take 15 minutes. Is now a good time? If not, when should I call you back?

The answers you give may be used in the report we submit, but your answers will be anonymous.

6.1.2 Personal Details

First I'd like to confirm some details about you:

1. What is your job title?
2. What do your job duties for Savings By Design typically involve?

6.1.3 Whole Building Paradigm vs. Systems Analysis

3. How many Savings By Design projects that you have been involved with used the whole building approach for program incentives vs. the system analysis? (percentage or number)
4. Do you see any differences between the projects using the whole building approach in comparison to projects using the system analysis? (*If needed, prompt by asking for differences in building types, building size, measures used)*
5. Do you feel that there is extra value derived by the design team from the whole building approach, and is worth extra effort and expense? If so, what type of value? How (or how not) is it worth it?
6. Do you feel that there is extra value derived by the owner from the whole building approach, and is worth extra effort and expense? If so, what type of value? How (or how not) is it worth it?
7. Would you make any changes to the structure for the whole building approach? (*If needed, prompt by asking about incentives, bldg types, software, etc)*

6.1.4 Program Incentives

8. How many Savings By Design projects that you have been involved with take advantage of only owner incentives? (percentage or number)
9. How many Savings By Design projects that you have been involved with take advantage of both design team and owner incentives? (percentage or number)
10. Do you feel the design team incentives promote added value to the building design process, for the design team and/or the owner? If so, what type of value?
11. Do you feel the owner incentives promote added value to the building design process? If so, what type of value?
12. Would you make any changes to the incentive structure for the design team or owner?

6.1.5 Program Procedures

Do you feel any changes should be made in the following program procedures:

13. Applications?
14. Energy analysis?
    a. How valuable is the service?
    b. Should the service be completed by the program staff or provided by energy consultants?
15. Incentive payments?
16. Verification?
17. Commissioning?
18. Other procedures?

6.1.6 Sustainability goals

19. Do you think the nonresidential new construction sector views energy efficiency as part of a larger sustainability goal or as a separate objective?

20. How many Savings By Design projects that you have been involved with are also part of the Sustainable Communities program? (percentage or number)

21. For those that participated, how did Sustainable Communities influence the projects? Are there other ways that Savings By Design could promote greater environmental objectives beyond energy efficiency?

22. How can Savings By Design better integrate with Sustainable Communities, LEED, or other Green/Sustainable programs and goals?

6.2 Nonresidential Focus Group Outline

1) Introductions & Round of Questions (15 - 20 mins.)
   a) Who we are and why we called you here.
   b) Who you are?
      i) Is energy efficiency important to you?
      ii) Why or why not?
   c) What will help make buildings more energy efficient?
   d) What needs to change to make energy efficiency more sustainable?
2) NRNC Market (20 – 30 mins.)
   a) Who is responsible for energy efficiency recommendations?
   b) Who is responsible for energy efficiency decision making?
   c) Does energy-efficiency work in this type of arrangement? Why or why not
   d) What role does SDG&E play in your design decisions? In the buildings market?
   e) Other possible questions or topics
      i) role of builders
      ii) role of Value Engineering
      iii) role of O&M staff / role of Cx
      iv) role of energy code
      v) (designers only) Discussion of optimized energy design
      vi) (designers only) educating owners
      vii) (owners only) how your designers present energy options
3) SBD Program (60 mins)
      a) Are you aware of the SBD program?
      i) How did you learn about it?
      ii) Have you participated? In what role? How often?
      iii) How favorable/unfavorable is your impression of SBD?
   b) SBD influence on your projects
      i) Did you change your design as a result of SBD influence? How?
      ii) How influential was SBD technical assistance?
      iii) How influential were the design team incentives?

iv) How influential were the owner incentives?

v) Were there other influences?

c) SBD program processes

i) How were your working relationships with the SBD program reps?

ii) How was the application process?

iii) How was the verification process?

iv) How was the incentive payment process?

d) Sustainable Communities (SC)

i) Are you aware of the SC program?

ii) How have you been involved with it?

iii) How did it influence your project(s)?

iv) How well did the process work for you?

4) Program Suggestions (10 mins)

a) What could SDG&E do to make SBD more effective for you?

b) What elements of the program should be dropped?

5) Ending Questions and "What Else?" (10 mins)

a) Other benefits of energy efficiency – productivity, increased comfort

b) If the programs went away, would you change your design practices?

c) If the standards or enforcement were relaxed, would you change your design practices?

6.3 Residential Focus Group Outline

We note that building practices and market actors differ between high rise and mid/low-rise multifamily housing and these differ from those for the single-family home building market. Consequently, each focus group will target one of these and the guide will be tailored, as needed, to the specific market segment. Focus group conversations will proactively draw out the differences and barriers each group experiences. It is also noted that builders may be more familiar with one participation channel or technology than another (e.g., Energy Star performance approach or prescriptive technology) so experiences specific to the technology or channel will be drawn out and highlighted.

1) Introductions & Round of Questions (15 - 20 mins.)

a) Who we are and why we called you here

b) Who you are

i) Role in industry, types of buildings (single- and multi-family), volumes, etc.

ii) Perceptions, attitudes, knowledge about energy-efficient and green and sustainable building practices and measures and value of these to your business

2) Advanced Home Program discussion (75 minutes)
   a) How did you learn about the Advanced Home Program?
      i) How would you describe it?
      ii) Why did you decide to participate?
   b) Perceptions about program participation procedures (recruitment, applications, energy analysis, rebates, verification, etc.)
   c) Perceived value of education (sustainable design and construction, green building practices, emerging technologies), design and technical assistance, financial support
   d) Review of program's successes and effectiveness in its four major activities:
      i) demonstration projects
      ii) support for Energy Star homes label
      iii) prescriptive measures (HVAC, insulation installation, DHW)
      iv) industry education on changes to Standards and technologies
   e) How was learning from program participation transferred to other areas in California?
   f) Was the program successful in engaging and partnering with other programs inside and outside the utility? How was it successful or not successful?
   g) Are there broader issues that need to be considered? For example, are there statewide or cross-utility consistency issues?
3) Program Suggestions (10 mins)
   a) What could SDG&E and SCG do to make the Advanced Home Program more effective for you?
   b) Are there elements of the program that should be dropped?
4) Ending Questions and "What Else?" (10 mins)
   a) If the program went away, would you change your building practices?
   b) What will you do with what you got out of this program?