SELF GENERATION INCENTIVE PROGRAM

PROGRAM ADMINISTRATOR COMPARATIVE ASSESSMENT

SUBMITTED TO:

PG&E M&E PROJECT MANAGER
JENNIFER BARNES
AND M&E COMMITTEE OF THE SGIP WORKING GROUP

APRIL 25, 2007

Prepared by:

Summit Blue Consulting
1722 14th Street, Suite 230
Boulder, CO 80302
720.564.1130

With Partners:

Energy Insights and RLW Analytics

Key Contacts:

Kevin Cooney
kcooney@summitblue.com

Patricia Thompson
pthompson@summitblue.com

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

E. EXECUTIVE SUMMARY

This executive summary highlights the major findings and recommendations from the Program Administrator (PA) Comparative Assessment Report (PA Comparative Assessment) of the Self Generation Incentive Program (SGIP). The SGIP was first launched in March 2001 by the CPUC. The SGIP operates in the service areas of Pacific Gas & Electric (PG&E), Southern California Edison Company (SCE), Southern California Gas Company (SCG), and San Diego Gas and Electric Company (SDG&E). The SGIP is administered by PG&E, SCG, and SCE in their respective service territories. The San Diego Regional Energy Office (SDREO) administers the SGIP in SDG&E's service territory.

The California Public Utilities Commission (CPUC) directed the Program Administrators to update the September 2, 2003 Comparative Assessment Report for the SGIP.[1] The CPUC decision directed the PAs to:

- Conduct an independent analysis of the effectiveness of program administration;
- Update the previous report (2003) with more recent data;
- Review administrative processes, marketing and outreach,
- Consider implications of different approaches; and
- Identify the PAs by name.

A research plan for the PA Comparative Assessment was developed by Summit Blue Consulting and its research partners, Energy Insights and RLW Analytics (the Summit Blue team) through meetings with the SGIP Working Group (WG) and with the input and oversight of the Measurement and Evaluation Committee (M&E Committee) of the Working Group.[2] The research plan also covers three additional related studies currently underway, and some research initiated for this report may result in additional analyses to be included in the Market Focused Process Study, the Market Characterization Study, or the Retention Study to be delivered later in 2007. The SGIP WG consists of representatives from each of the PAs, as well as representatives from SDG&E, the California Energy Commission (CEC) staff associated with the Emerging Renewable Program, and the Energy Division of the California Public Utilities Commission (CPUC). The intended audience of this report is the SGIP WG.

E.1 PA Comparative Assessment Research Objectives

The main research objectives of the PA Comparative Assessment were to:

Compare administrative processes considering each PA's strengths and weaknesses. This objective included comparing each PA's application processing, project oversight, incentive processing, and verification and data management, while considering interactions external to the SGIP group such as key accounts, interconnection, and marketing.

[1] Self-Generation Incentive Program Administrator Comparative Assessment, Itron, September 2, 2003.

[2] Self Generation Incentive Program Market Focused Process, Market Characterization, Retention and Program Administrator Comparative Assessment Studies Final Research Plan, Summit Blue Consulting, January 26, 2007.

Compare marketing and outreach efforts by identifying and documenting marketing and outreach efforts such as the PAs marketing plans, Web sites, literature, training, and other marketing and outreach avenues.

Consider implications of different approaches and identify unique challenges or success stories.

Consider external market variations by investigating the effect of rates, market demographics, and permitting issues such as air quality permits or building permits on the success of the PAs.

E.2 Evaluation Methods

The evaluation methods used included:

- Review of program participation records and reports submitted to the CPUC through December 2006 from all PAs;
- Review of program records on outreach activities, public presentations, and attendance lists;
- In-depth and informational interviews with staff from each PA, as well as project developers across the state, and CEC and CPUC staff;
- Quantitative analyses using data regression methods to explain the relationship between project indices (i.e., days to completion);
- Focus groups with SGIP host site participants in each of the PA's territories;
- Review and refinement of effectiveness criteria; and
- Review of literature sources, relevant industry documents, and relevant Web resources.

E.3 Overarching Themes and Key Findings

Six overarching themes emerged during the course of the assessment.

#1 – The differences between the PAs are nuances of strengths and weaknesses rather than questions of capability and incapability.

#2 – The success stories and the nascent cultural shift in California are not being leveraged sufficiently by most PAs. These stories need to be captured and disseminated further to continue to feed the cultural shift and demand for the SGIP.

#3 – Regional factors external to the SGIP such as air permitting can be a barrier to participation.

#4 – Some issues and barriers to the SGIP are structural to the program.

#5 – Open governance can be important and the use of the SGIP WG to guide consistent interpretation of rules by the PAs has been helpful.

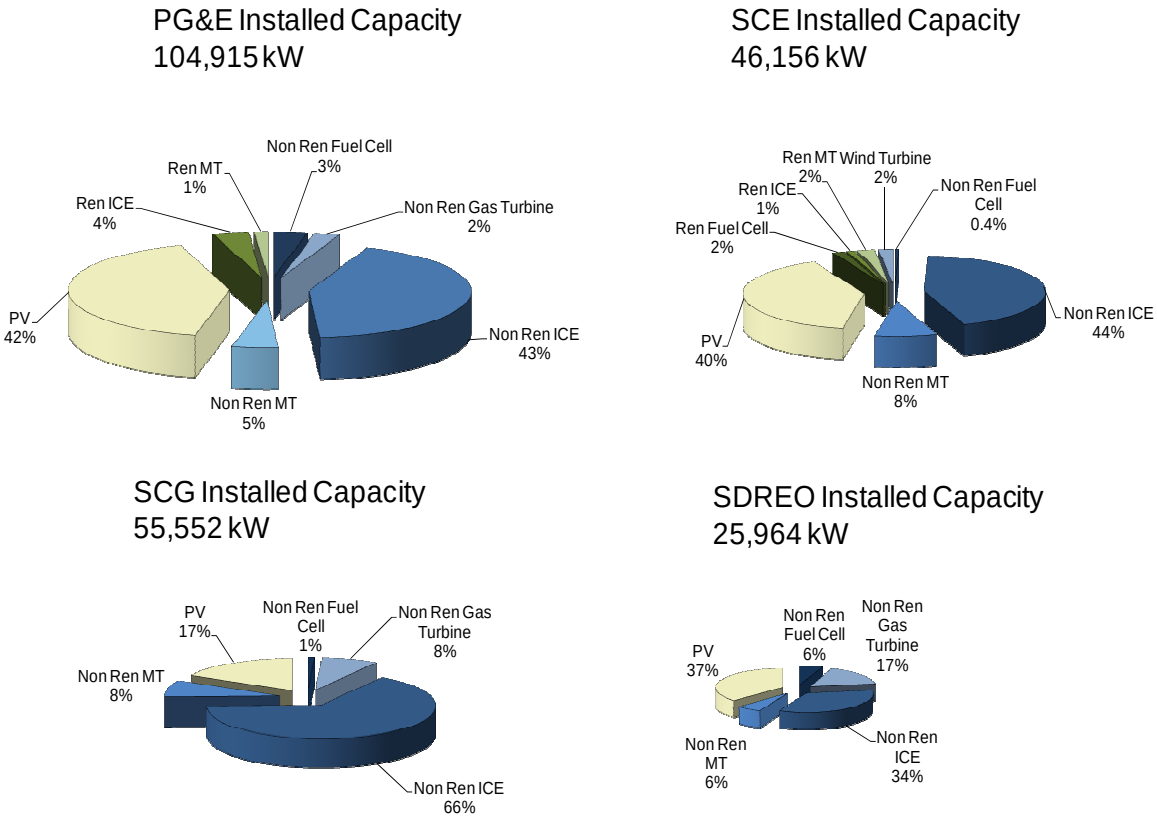
#6 – The SGIP program appears to have stimulated the development of new business models by some PV developers, while regional differences also continue to impact business development.

Key findings by topic area are summarized below.

Installed capacity – Significant clean on-site generation resources have been sited in California under the auspices of the SGIP program since 2001. Figure E-1 below shows how much capacity, by technology

type, has been installed with the aid of the SGIP program and the financial incentives it provides. While there are variations in the ratios of installed equipment in each PA territory, PV and internal combustion engines were the two largest categories for each PA.

Figure E-1. Distribution of Installed System Capacity (kW)



Administrative processes - The staffing and organizational structures are similar within all PAs, with the exception of SCE, which is somewhat leanly staffed. The PA's administrative processes are mostly similar to each other, as would be expected in a statewide program. All PAs appear to routinely grant project extensions, as evidenced by the median SGIP navigation time of 517 days.

Observable project differences between the PAs include the following:

- Projects at SCE appear to navigate the process faster than other PAs.
- SCE appears to intercede for applicants, by checking on interconnection status, and their single point of contact approach is well received by developers.
- SDREO requires projects to install NGO meters to help understand system impacts and value, which supports later Impact and Retention Studies.

- SDREO discusses project 'right-sizing' with applicants and conducts site visits to see if SGIP is right for the prospective applicant.

- PG&E is challenged by the large size of their territory, particularly with respect to having multiple interconnection offices.

- Both SCG and SDREO are experiencing increases in application drop outs. SCG appears to be the most impacted by the increase in gas prices and increasingly stringent air emissions limits and SDREO's drop out increase may be the result of tariffs that are not PV friendly.

- As the program matures, administrative costs as a function of total active deal flow (applicants and those in process) appear to be going down. However, based on regression analysis some variation in customer reported total dollar per Watt installation costs were identified.[3]

Implications of different approaches

Project developers involved with the SGIP rated the different PAs based on the following metrics: ease of working with, timeliness, responsiveness to information requests and assistance with interconnection, application materials and marketing. On average, all PAs received a rating of about 4, on a 1-5 scale, where 1 is defined as "poor" and 5 is defined as "excellent."

Compare marketing and outreach efforts

The marketing and outreach efforts of each PA differ and some PAs felt that marketing a program that was, at times, oversubscribed was not necessary. Observable differences included:

- SCG differs from other PAs by offering incentives to account reps for signing and moving SGIP projects through the process, advocating for a 'people do what they are rewarded to do' philosophy.

- PG&E has well organized marketing and outreach efforts. They are also the most consistently oversubscribed PA. External factors such as market attitudes and performance characteristics are also factors that contribute to this result.[4]

- SDREO is the only PA that explicitly markets the value proposition of the program through "success stories."

- SCE is somewhat more leanly staffed than other PAs and this may contribute to less emphasis on the marketing effort as compared to other PAs.

External market variations

The PAs are limited by their ability to address the external variation issues, such as air emissions regulations, building construction regulations, interconnection and tariff issues, and demographics. These external variations can be barriers to participation in the SGIP program and to deploying more clean on-site generation in California, generally. Some efforts to respond to these barriers by PAs include:

[3] Note that the regression analysis was based on the applicants' understanding of their project at the time of application.

[4] Itron, SGIP Fifth Year (2005) Impact Evaluation Final Report March 1, 2007, Appendix A. Showing performance of PV systems in PG&E territory to be better on average than other PA territories.

- SDREO has held workshops that involved the local air district.

- PG&E has included air permitting information in some of its past outreach efforts.

- SCE's SGIP program flyer explicitly states that an applicant needs to apply and receive air permitting documentation in order to receive the incentive payment.

- PAs generally recognize that building construction regulation permitting can be a significant issue.

- PAs generally received ratings of 4 on their interconnection helpfulness, on a 1-5 scale, where 1 is defined as “poor” and 5 is defined as “excellent.”

E.4 Recommendations

High level recommendations from the research and analyses are summarized below:

- Developers and applicants prefer single points of contact and consistent answers to questions. In larger organizations one staffer cannot serve all applicants. Increasing staff access to data and/or creating dedicated SGIP account managers could help achieve the single point of contact goal.

- Evidence of top down support for SGIP and integration of SGIP with other PA offerings appears to improve program penetration. PAs should further develop this integration and the CPUC could remove barriers to support integration.

- PAs should continue to investigate process improvement strategies similar to an effort recently conducted by the CEC in its Emerging Renewables program.

- Helping applicants get it right the first time and retaining applicants through later stage gates may drive program costs down. One way to do this is to create a supplement to the program guide that stresses common reasons projects fail or stall.

- All PAs should continue to work to improve the interconnection process and the consistency across different interconnection representatives.

- The PAs should make it clear to applicants that extensions can be granted and the legitimate reasons, or the CPUC should consider more realistic time frames for project completion.

- Cost accounting and projection is problematic because PA administrative budgets operate on a calendar year basis, while incentives are encumbered on a Program Year basis. It is difficult to extract an accurate relationship between the costs and administrative effectiveness due to these effects. The PAs could consider tracking administrative costs in more detail, though it is not clear that the value would outweigh the cost to do so.

- Free and earned media is underutilized by some PAs. There are many success stories that local papers/news media would likely embrace if properly packaged for them.

- Marketing should emphasize success stories and the value proposition, not just the process of participating in SGIP. Developers and applicants use the PA Web sites frequently and this type of information needs to be included there.

- PAs should consider creating an online user's group, or other networking tool. Applicants know they are early adopters in some cases and are excited to share their information. The advice available from such a user's group could help to retain existing applicants throughout the project process and could drive administrative costs down.

- Though the PAs are, by nature, limited by what actions they are able to take to address the external variation issues, there are some actions that they can undertake to counteract the barriers applicants and project developers' encounter. These are summarized below.

    - Provide links to local air quality management district and building construction regulation Web sites;

    - Include permitting information, such as emissions compliance testing, and interconnection information in printed SGIP program materials;

    - SGIP staff should be knowledgeable about permitting, interconnection, and tariff issues;

    - Offer seminars that include outreach to air districts, local permitting groups, interconnection, and tariff departments;

    - Request that utility interconnection departments communicate approval of SGIP projects to PAs. This would allow the PA office to better track project advancement and provide coordination assistance if needed;

    - Create a log of interconnection problems to address with utility interconnection departments. This material could then be presented to the CPUC to document how significant an issue utility interconnection is to SGIP (and likely to CSI) project development;

    - Bring stakeholders together for particularly challenging projects to overcome barriers and move the project forward;

    - Provide financial guidelines for potential program participants to better estimate the economic viability of on-site generation projects. Such guidelines need to go beyond simple payback rates and incorporate demand charges, standby rates, and other tariff components that can have disproportionate impact on on-site generation project economics; and

    - Consider other more system-wide approaches that work further upstream to encourage the purchase of power from clean DG by utilities such as Europe's "feed-in" laws which reduce paperwork needed to obtain SGIP-like incentives.

E.5 Recommendations for Future Research

- Consider focus groups or *voice of the customer* research with less urban participants to capture their views. The completed focus were held in urban areas and as a result did not capture less urban customers types such as dairies or landfills. Additional voice of the customer research could address this and provide additional insights for program marketing.

- Consider periodic updates to the PA Study as better understanding of markets, processes and retention are gained. In particular the differing market characteristics of each PA territory

indicate that this may be a fruitful course of study as it relates to the processes and cost of SGIP type installations.

- Schedule regular PA studies at intervals of three years. This would provide sufficient elapsed time to generate data by which to evaluate PA efforts.

- Consider regular market research updates to help support and evaluate the PAs efforts as they relate to the specific needs of their territory and the program more generally.

- Consider how best to add important technologies that are not currently covered by SGIP, including hybrid technologies, such as advanced energy storage.

1. BACKGROUND

The California Public Utilities Commission (CPUC) directed the Program Administrators (PAs) to update the September 2, 2003 Comparative Assessment Report for the Self Generation Incentive Program (SGIP).[5] The CPUC ordered this report to include "an independent analysis of the relative effectiveness of the utility and non-utility administrative approaches" using data collected from June 2003 through May 2006.[6] The ruling also required that this report "clearly identify all program administrators and address the performance of each" administrator and include a review of marketing approaches.[7] To prepare an approach for the PA Comparative Assessment Report (PA Comparative Assessment), Summit Blue Consulting and Research Partners, Energy Insights and RLW Analytics (the Summit Blue team) developed a research plan that was completed with the input and oversight of the Measurement and Evaluation Committee (M&E Committee) of the SGIP Working Group (WG) on January 26, 2007.

The SGIP was first launched in March 2001 by the CPUC. The SGIP operates in the service areas of Pacific Gas & Electric (PG&E), Southern California Edison Company (SCE), Southern California Gas Company (SCG), and San Diego Gas and Electric Company (SDG&E). The SGIP is administered by PG&E, SCG, and SCE in their respective service territories. The San Diego Regional Energy Office (SDREO) administers the SGIP in SDG&E's service territory. The SGIP WG consists of representatives from the PAs, SDG&E, the California Energy Commission (CEC) staff associated with the Emerging Renewables Program, and the Energy Division of the California Public Utilities Commission (CPUC).

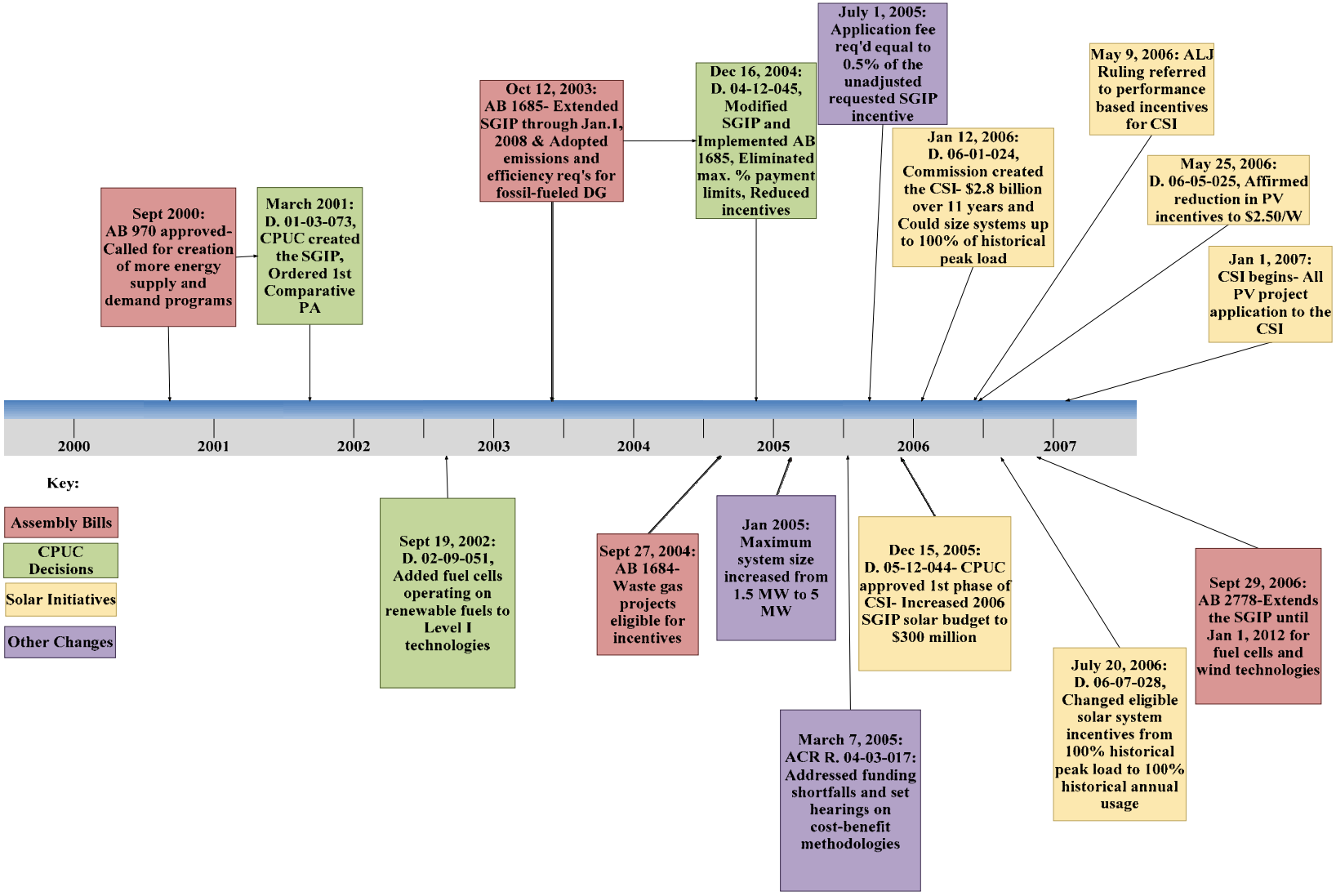
Over time the SGIP has been modified in a number of ways. A brief overview of key events in the history of the SGIP is presented below in Figure 1-1.

[5] Itron, Self-Generation Incentive Program Administrator Comparative Assessment, September 2, 2003.

[6] Some trends and differences are only appreciable when looked at over the total history of the SGIP. Also, because administrative costs are typically tracked on a calendar year basis, the Summit Blue team has generally included projects on file at the close of the 2006 calendar year.

[7] May 18, 2006 ruling in OIR 06-03-004

Figure 1-1. SGIP Event Timeline



1.1 Research Objectives

The California Public Utilities Commission (CPUC) directed the Program Administrators to update the September 2, 2003 Comparative Assessment Report for the SGIP.[8] The CPUC decision directed the PAs to:

- Conduct an independent analysis of the effectiveness of administration;
- Update the previous report (2003) with more recent data;
- Review administrative processes, marketing, and outreach;
- Consider implications of different approaches; and
- Identify PAs by name.

The main objectives of the PA Comparative Assessment include:

- Comparison of the administrative processes and marketing and outreach approaches of each administrator.
- Consideration of the implications and effectiveness of different approaches and efforts.
- Investigation of the effects that external market variations (such as demographics, tariffs, and local building or air quality issues) may have on the PAs' efforts and efficacy.

Finally, the results of this study are compared to the extent practicable to the prior PA Comparative Assessment.

1.2 Description of the PA Comparative Assessment Approach

The data collection tools used to accomplish the research objectives are discussed in this section. A more detailed overview of the research objectives, corresponding issues, and research tools is presented in Figure 1-2 followed by a discussion of the issues implicated by the main research objectives. This discussion was informed by working meetings with the M&E Committee and the SGIP WG at project kick off. Details on data acquisition methodologies are presented in Section 2.

The PA Comparative Assessment is the first of four major studies to be conducted on the SGIP by the Summit Blue team. The other studies planned include a Market Focused Process Study (Process Study), a Market Characterization Study (Market Study), and a Retention Study. These studies will broaden and deepen the research begun in this PA Comparative Assessment. The data collection activities and analyses associated with these four studies have significant overlap, as shown in Figure 1-2 below.

[8] Itron, Self-Generation Incentive Program Administrator Comparative Assessment, September 2, 2003.

Figure 1-2. Conceptual Overlap of SGIP Research Studies

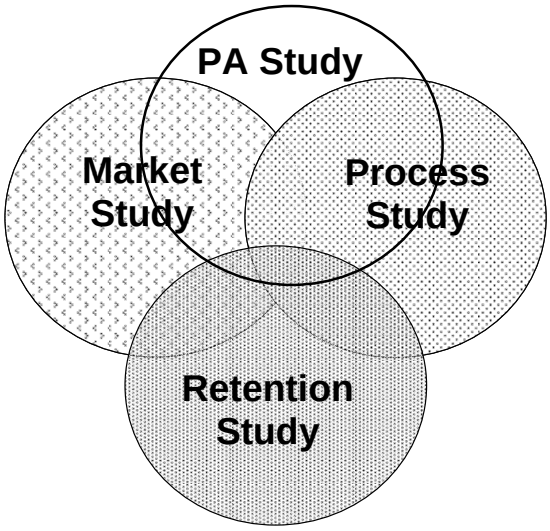


Table 1-1 below summarizes the data collection activities for all four studies, and Table 1-2 summarizes those efforts that were conducted to inform the PA Comparative Assessment. Suggested future research is presented in Section 6.4.

Table 1-1. Summary of Research Efforts for all Studies

Information Source	Approximate Number of Interviews, etc.	Timing (All 2007)
PA and SGIP Staff In-depth Interviews	8 (minimum of 2 sets with each PA)	January
WG (CPUC and CEC) In-depth Interviews	2-3	January
Informational Interviews with non-SGIP utility staff (interconnection) and external variation sources (air boards)	27	January and February
Follow on Informational Interviews as needed throughout the remainder of Evaluation	40	Ongoing
Developer In-depth Interviews	26	January
Participant Focus Groups	4 (one per PA territory)	February
Participant Telephone Surveys	315	March to April
Non-Participant Telephone Surveys	260	March to April
Participant In-depth Interviews	45	April
Non-Participant In-depth Interviews	25	April

Information Source	Approximate Number of Interviews, etc.	Timing (All 2007)
Review of Itron M&E Database	Iterative	Ongoing

The matrix presented on the following page *maps the key objectives of the PA Comparative Assessment to various data source*s. A single *X* indicates that a particular data source may yield useful information for addressing the corresponding objective, while *XX* indicates that the data source will be critical to addressing the objective.

Table 1-2. PA Comparative Assessment Research Objectives and Information Sources

Objective	Issues within Objective	Information Source					
		PA Interviews	Participant Interviews & Focus Groups	Non-Participant Interviews and Focus Group Style Interview	Developer Interviews	Program Marketing Collateral and Outreach Documentation	Program Record Review
Compare Administrative Processes	Identify and document processes. Compare processes between utility and non-utility administrators. Consider interactions external to SGIP group such as key accounts, interconnection, and marketing.	XX	XX		X	X	X
Compare Marketing and Outreach Efforts	Identify and document efforts. Consider goals of program, subscription rates and channels. E.g., for periods where program oversubscribed, outreach may be less important. Are there sites with interconnection permission that did not use the SGIP funding? If so why?	XX	XX	X	XX	XX	X
Consider Implications of Different Approaches	Do the different approaches of the PAs result in unique challenges or success stories?	XX	XX		XX		XX
External Market Variations	What are some of the external market drivers: rates, market demographics, local building issues? Do the PAs tailor their approach to the local market? Can they do so and maintain statewide consistency?	XX	XX	X	X	X	X

Review and Refine Effectiveness Criteria

The following criteria were used in the 2003 PA Comparative Assessment and were derived from the original set of SGIP approved evaluation criteria:[9]

Table 1-3. Program Goals and Criteria

Program Goal/Rationale/Objective	Criteria for Meeting Goal
Encourage the deployment of distributed generation in CA to reduce peak electrical demand	Increased customer awareness of available distributed generation technology and incentive programs
	Fully subscribed participation in program (i.e., total installed capacity, number of participants)
	Participants' demand for grid power during peak demand periods is reduced
Ensure deployment of clean self-generation technologies having low and zero operational emissions	Maximum allocation of combined budget allocations for Level 1 technologies: PV, wind turbines and fuel cells (operating on renewable fuel) and Level 2 technologies: fuel cells (operating on non-renewable fuel)
	A high percentage of PV, wind turbines, and renewable and non-renewable fuel cell projects are successfully installed with sufficient performance
Help support continued market development of the energy services industry	Quantifiable program impact on market development needs of the energy services industry
	Demonstrated consumer education and program marketing support as needed
	Tracking of energy services industry market activity and participation in the program

Additional criteria developed from interviews, a review of relevant papers and evaluation team judgment include:

- Administrative cost per number of applications and per unit installed capacity;
- Administrative cost as a percent of overall program budget;
- Penetration rate;[10]
- Growth rate of projects over time;
- Customer satisfaction ratings;[11]

[9] Table based on Table 2-1 Self Generation Incentive Program Approved Evaluation Criteria. "Self-Generation Incentive Program Administrator Comparative Assessment," Itron, September 2, 2003.

[10] Penetration data over time is dependent on market data and will be addressed further in the Market Study due in August of 2007. For a review of PA demographics, see Section 4.4.

[11] Project Developer reports of customer awareness and concerns is included in this report, but customer survey data is needed to rigorously report on customer satisfaction, and will be addressed in the Process Study due in June of 2007.

- Integration of program-specific needs throughout utility organization;
- Project Developer (PD) satisfaction ratings; and
- Response times to program submittals and inquiries.

A more in depth review of effectiveness criteria is included in Appendix B.

Compare and Consider Different Administrative Approaches

The Summit Blue team identified and documented the administrative processes used by each PA. During the project kick off meeting, the CPUC requested that this not simply be a comparison of utility and non-utility approaches to program administration, but rather a comparison of each PA's relative strengths and weaknesses to evaluate the SGIP and inform the deployment of the California Solar Initiative (CSI). Comparison is based generally on the criteria listed above and input from the WG M&E committee, but it also includes a review of the following administrative processes:

- application processing;
- project oversight;
- incentive processing; and
- verification and data management.

Compare Marketing and Outreach Efforts

Preliminary analysis of the program records indicated that the PAs have various strengths at reaching specific market segments. This may be reflective of business demographics, the unique expertise of each PA or, possibly, the different techniques used in marketing and outreach. The WG expressed a desire to better understand the effectiveness of channel marketing. However, this avenue of inquiry must be balanced against the goals of the program and other the circumstances of each PA. For example, the SGIP was originally envisioned to be marketed almost exclusively through project developers similar to the Standard Performance Contract Program. Preliminary data review indicates that about 18% percent of projects are customers that applied without the assistance of a project developer. These projects tend to be dominated by public entities. Therefore, any customer interviews conducted beyond the focus groups would likely be within this sector, where channel marketing was not used. Additionally, there were periods when the program was oversubscribed, and marketing the program would have only served to create additional waitlists and frustrated participants.

Consider External Market Variations

The SGIP PA Comparative Assessment includes external variation analysis because there are distinct external issues that affect the Program, and even though SGIP PAs are limited in influencing directly these external issues, they can play a role in alleviating some of the frustration and surprise caused to project developers, host customers, and other stakeholders from issues external to the SGIP.

This report examines four external issues that have a direct impact on the adoption rate and success of SGIP projects and the program at large. These include:

- **Air emission regulations.** The U.S. Environmental Protection Agency (US EPA) California Air Resources Board (CARB) and 35 air quality management districts (AQMDs) determine emissions requirements from electric power generation sources and boilers.

- **Building construction regulations**. National standards writing organizations, the State Architects Office, and local (city and county) building offices determine the requirements for installing on-site generation equipment, including electrical, fire, and structural issues.
- **Interconnection and tariff issues.** Electric utilities, both regulated, investor-owned utilities and publicly-owned municipal utilities and irrigation districts, establish (sometimes with regulatory approval) and execute policies that allow the integration of on-site generation to the electric grid. Via tariffs, they also create the economic playing field on which potential SGIP projects end up being compared during project planning. The activities are outside the direct realm of SGIP PAs, even when the PA and utility are from the same company, as occurs at two of the SGIP PAs (PG&E and SCE).
- **Demographics.** Significant variation exists between the base economies and business demographics of each PA. The business demographics of each PA are changing over time with some PAs changing at a much greater rate than others.

This list is not exhaustive, as a number of additional issues could have been included in the external variation analysis, such as the supply of PV modules. The intent is to focus on the issues that have had had a direct and immediate impact on SGIP projects. Though the PAs have limited ability to influence these issues, a better understanding of the depth of these issues, and of incremental measures the PAs might undertake to provide more useful information to potential host customers, project developers, and other stakeholders could prove valuable.

2. METHODOLOGY

This section provides a review of the data collection methodologies used to gather information for this report, as well as a discussion of potential biases and possible shortcomings related to each methodology.

2.1 Review of Program Data

The Summit Blue team submitted a data request on November 29, 2006 to the PAs through the evaluation project manager. The request asked for contact information, databases, business demographic information, marketing collateral examples, and other documentation. A number of other data items, for example, pointers to sites where systems are known to have been removed or the property has been sold since project development, were discussed during the in-depth PA interviews (see Section 2.2). These interviews led to follow-on data requests for additional, administrator specific information in some cases.

For purposes of this report, the team has used program records submitted to the CPUC up through December 2006 from each of the four PAs: PG&E, SDREO, SCE and SDG&E. These records include two reports per month: the Monthly Project List and the Monthly Budget Status Report. The Monthly Project List includes a list of projects by year and a list of cumulative projects to date. Each project is listed along with other information points such as project ID, incentive level received, system type and fuel type. The Monthly Budget Status Report contains program data on budget and reallocations, program expenditures, program definitions, and rebate amounts. A summary of application statistics by year and incentive level is also included in the Budget Status Reports.

The PAs also provided additional internal program records, where available, on outreach activities, public presentations and attendance lists.[12] In addition, internal tracking forms and approaches used by the administrators[13] helped the team conduct a preliminary evaluation of the PAs' processes, with particular attention on how those processes differ.

2.2 In Depth and Informational Interviews

A variety of qualitative, in-depth interviews as well as shorter, less formal informational interviews were conducted to capture data for the different studies. Thus far, in-depth interviews have been conducted with staff from each PA, project developers across the state, the CEC and CPUC staff. Additional in-depth interviews with participating host customers and non-participating customers are scheduled over the course of the ongoing research this year. PA interviews were substantially conducted in-person along with follow-on telephone discussions with senior staff from Summit Blue. Developer interviews were conducted by Energy Insights by telephone at scheduled times convenient to the respondent and, with the permission of the respondent, many were tape-recorded for note-taking purposes. The organizations interviewed are listed in Appendix A.

In total, 26 in-depth interviews were conducted with SGIP project developers, representing the experience of 25 companies. There are almost 500 different project developers who have participated in the SGIP process, but only 49 that have done ten or more projects. These top 49 program participants account for

[12] In the research plan it was suggested that original applications provided to the administrators would provide additional information for tracking different projects' progress; however, this does not appear to be readily feasible.

[13] For example SDREO was able to provide an internal procedures manual for their approach to the SGIP.

64% of all completed projects to date.[14] The selections of best interview candidates were based on creating a good balance of interviews with: major developers, important niche players, developers that are more active in certain PA territories, and developers that represent each major self-generation technology type. In addition, at least one interview was conducted with a developer that had gone out of business to help understand reasons for project failure. For each PA, the interviewed developers represented between 21% and 35% of all completed projects.

Draft interview guides were prepared for comment and review by the SGIP M&E committee. Final interview guides are located in Appendix A. Each survey instrument was designed to capture information needed to understand variations in PA procedures and were focused on those data elements unique to each respondent group (rather than duplicating effort with other data collection activities). The developers interviewed and the number of completed projects by PA is contained in Table 2-1 below.

Table 2-1. Developers Interviewed and Number of Completed Projects by PA

Company Name	PG&E	SCE	SCG	SDREO	Technologies Covered
3rd Rock Systems and Technologies	5			5	PV
Advanced Energy Systems	3				I/C
Alliance Star Energy				1	Fuel cells
Allied Energy Services					I/C (Non-RE Fuel), Fuel cells, Microturbines
California Construction Authority	8	8			PV
California Power Partners	4	5	2	4	Microturbines
Chevron Energy Solutions	18	2	7	3	PV, I/C, Fuel cells, Microturbines
DER (The Distributed Energy Resource Group)					(I/C, PV, Fuel cells, Microturbines)
DG Energy Solutions, LLC	1		4	1	I/C
D&J Electric (recently merged with SunTechnics)	4			1	PV
EI Solutions (formerly Prevalent Power)	7	1			PV
Ingersoll-Rand	2				Microturbines
Northern Power Systems	1			1	I/C
Pacific Power Management	13				PV
PowerHouse Energy	1	3	5		Microturbines, I/C
PowerLight Corp.	59	6	11	3	PV

[14] For those projects for which a developer is listed, as of November of 2006.

Company Name	PG&E	SCE	SCG	SDREO	Technologies Covered
RealEnergy	3	4		2	I/C
Renewable Technologies	8				PV, Fuel cells
Solar Power Systems	4				PV
SolarCraft Services	5				PV
SolarGen Properties	1				PV
Spectrum Energy	3				PV
SPG Solar, Inc.	2			1	PV
Sun Edison/New Vision Technologies	3	37	1	7	PV
WorldWater Holdings	2	1	1	3	PV
Total	157	67	31	32	--
Percent of complete projects	35.8	27.6	21.2	26.7	

.

2.3 Quantitative Analyses

This section describes the data regression methods used to analyze project completion data. In general, the regression analyses used ordinary least squares techniques (in Excel) to explain the variation days to completion as a function of the project characteristics and the PA. All data from the regression analyses were derived from the monthly project reports going from 2001 to the present.

Attempts to use projected completion data for 2005 and 2006 across all project types and PAs were not successful due to limited sample sizes for some project types and the resulting large potential variances in projected fund expenditures. Regression analyses was run to explore the variation in solar project costs (as measured in dollars /Watt to the host customer ($/W)) and days to completion as a function of the project characteristics (public entity or PA). However, the $/W data were not conclusive in that the data were derived from customer self reports at the time of application.

2.4 Focus Groups

Traditional "behind-glass" focus groups were held in February 2007 with SGIP participants to gather feedback about their perspectives of and experience with the program. The focus groups took place on February 7th, 8th, 12th, and 13th, 2007 with SGIP participants in the programs administered by SCG, SCE, SDREO and PG&E, respectively. Focus groups provided a means to investigate how the program outreach and processes are being received by participants and to allow the PAs to observe what their program participants think about the program.

Focus groups are particularly useful at helping to understand participant motivations and their reactions to program rules, processes and communications. Relative to other research techniques, focus groups are particularly effective for understanding participant motivations (e.g., regarding adoption of new or different products or ideas, such as grid-connected distributed generation). Statistical research methodologies can be less effective for studying complex decision-making processes such as new product adoption, and one-on-one interviews, while very effective at eliciting input, don't allow for the group dynamic which is so critical in understanding motivation. Topics studied in the focus groups are enumerated in the Research Objectives and Information Sources table above (Table 1-2).

The Summit Blue team provided the M&E Committee an opportunity to review and comment on the focus group discussion guide which is contained in Appendix A.[15] A review of the recruitment process and possible sources of selection bias are presented below.

Recruitment Process. One focus group facility was reserved in each PA territory. Potential recruitment lists of program participants were developed that included program participants within a 20 mile radius of the chosen facility. Only those participants that had a complete or substantially complete project were accepted for recruitment. Calls and e-mails were sent to those on the recruitment list. Prospective participants were screened to ensure that participants had sufficient project experience to understand the decision-making process that the participant's company conducted regarding the program. Participants were compensated with a cash incentive to participate.[16]

[15] Despite vetting focus group guides, at least one observer from SDREO expressed concern that participants sometimes use the term SDG&E and SDREO interchangeably, and expressed a desire for more probing on this issue.

[16] At least two participants in the SDREO focus group, did not accept the cash thank-you.

Participant Satisfaction. During the recruitment process, the team discovered that those that expressed a negative experience with the program appeared less likely to be willing to attend the focus groups.

Participant Involvement. Many participants in the SGIP hired a contractor or developer who performed most of the interaction with the PA for the participant, including applying for the rebates through the SGIP. Because having a substantial role in the application, installation, financial analysis, and decision making processes was a selection criterion for the groups, a substantial number of participants who had little direct involvement in the program were excluded.

Public Entity Involvement. During the recruitment process, the team found that contacting participants involved with public entities was, in general, easier than contacting participants with private entities. As a result the representation of public entities in the focus groups was generally slightly higher than in the SGIP (see Table 2-2).

Table 2-2. Public Entity Involvement in the Focus Groups

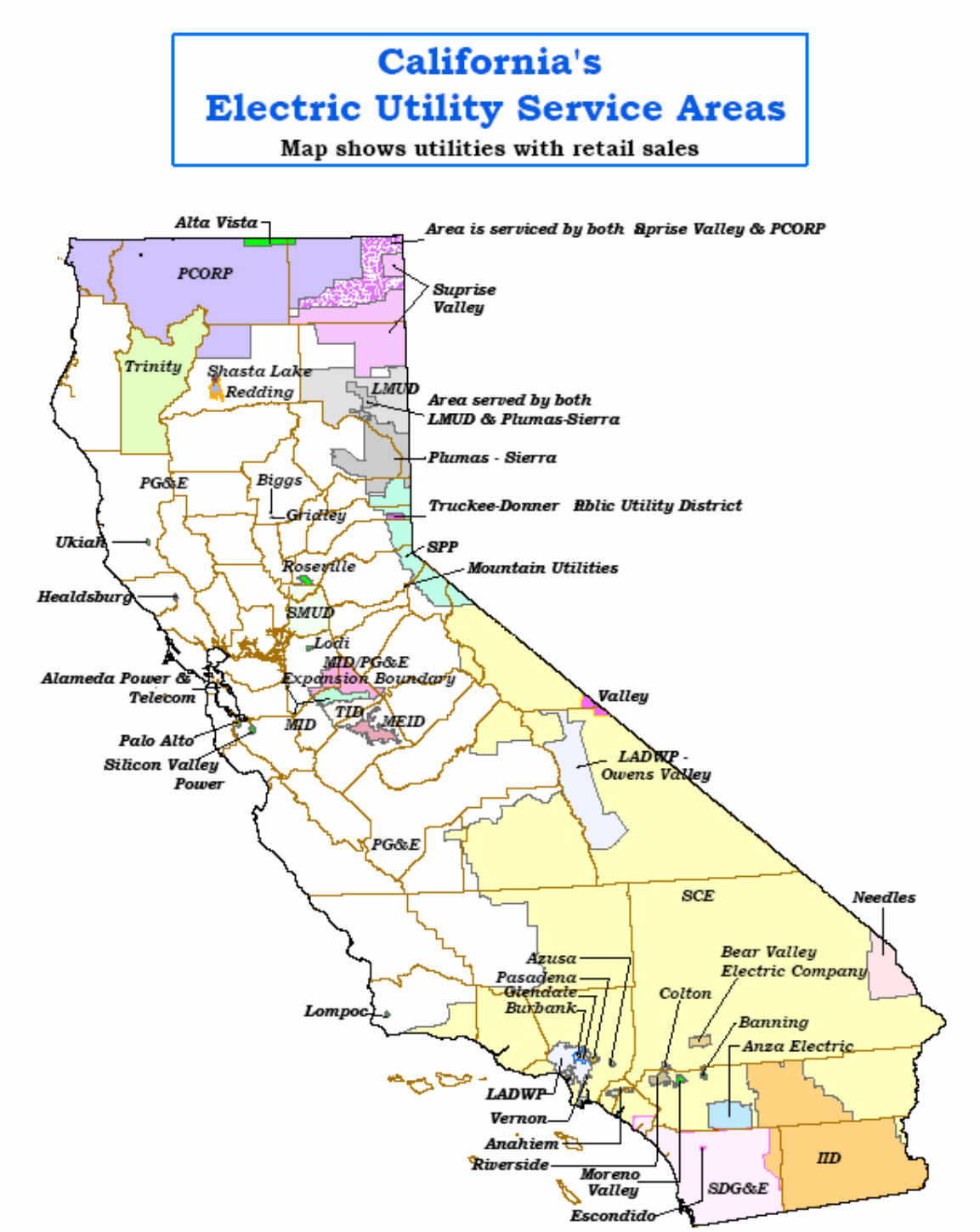
	PAs			
	PG&E	**SCE**	**SCG**	**SDREO**
Completed Public Entity SGIP *Projects*	37%	26%	16%	44%
Public Entity Focus Group *Participants**	33%	25%	29%	58%

** Some participants represented several projects.*

Participant Stage in the Process. Because a goal of the focus groups was to gain feedback on the SGIP, the team recruited only those participants who either had completed projects or projects that had almost reached the completed stage. Therefore, participants with projects that did not receive a confirmed reservation letter, and thus did not make it past the Proof of Project Advancement (PPA) stage, were likely not recruited for the focus groups. The participants with projects that did not receive a confirmed reservation letter may have had different comments and suggestions about the SGIP than those that passed this stage gate.

Focus Group Facility Locations. Recruitment lists for each focus group facility location in each PA territory were created and sorted based on participants whose zip code or city stated in the program records was within approximately a 20 mile radius of the focus group facility location. Subsequently due to lower than needed yield, the team increased the radius to 30 miles. The focus group facilities used were located in densely populated areas, in Pasadena, Irvine (both located in the greater Los Angeles area), San Diego and San Francisco. Therefore, the projects represented by the focus groups, do not include dairies or landfills, or other less urban types of SGIP participants. This is relevant as PG&E, SCG and SCE's territories extend far into low density population centers with SDREO's (SDG&E) territory also extending somewhat outside the highly populated region near the coast (see Figure 2-1 and Figure 2-2).

Figure 2-1. California's Electric Utility Service Areas



Source: California Energy Commission, California On-Line Energy Maps, http://www.energy.ca.gov/maps/utility_service_areas.html.

Figure 2-2. California Natural Gas Utility Service Map

Source: California Energy Commission, California On-Line Energy Maps, http://www.energy.ca.gov/naturalgas/gasmap.html

2.5 Additional Effectiveness Criteria

The project team conducted a review and refinement of the program's Effectiveness Criteria. The complete review of the criteria developed for measuring progress toward the program's stated goals is located in Appendix B.

The SGIP Evaluation Criteria, and the Program Goals with which the criteria were associated, initially had been established in the original enabling legislation and Attachment 1 of the CPUC's subsequent decision (D.01-03-073) of March 2001. The goals and criteria incorporated input from the program's WG and were ALJ-approved in April 2002. These goals and evaluation criteria were centered around peak demand reduction, developing clean on-site sources, and market development, and are summarized in Table 1-3.

During the 2003 program evaluation, additional criteria were developed from the findings that came out of the interview process and secondary research. These additional evaluation criteria were developed to augment the original criteria so that the effectiveness of program administrative approaches being evaluated could be better measured. The additional criteria are listed in Table 2-3 below.

Table 2-3. Additional Criteria for Assessing Administrator Effectiveness

Criterion	Comment
Administrative cost per number of applications and per unit of installed capacity	This criterion was developed to assess the approximate administrative cost per applicant or system installed. Administrative costs minus evaluation were used in the numerator. The number of active and completed applications or the kW of installed capacity was used in the denominator.
Administrative cost as a percent of overall program budget	(No comments added)
Penetration rate	This is estimated from the number of applications per 1,000 eligible applicants in service area. This criterion was developed to assess the approximate effect of marketing efforts.
Growth rate of projects over time	This criterion was developed to assess the approximate effect of marketing efforts. The number of active and complete applications as well as the number of withdrawn and rejected applications from the first to the second year were compiled.
Customer satisfaction ratings	(No comments added)
Supplier satisfaction ratings	(No comments added)
Average response times to program submittals and inquiries	(No comments added)

A further set of criteria pertaining to organizational characteristics also was developed in the 2003 PA Comparative Assessment[17] to address issues related to those characteristics:

- The general organizational structure
- The alignment of the goals of the administrative organization with public policies
- Conflict of interest
- Attributes of fiscal responsibility including accountability and legitimacy
- Influence of regulation
- Technical and administrative expertise

[17] Itron, "Self Generation Incentive Program, Program Administrator Comparative Assessment," September 2, 2003.

- Support for M&E activities

The foregoing information was then applied to an analysis of the administrators' performance against the various criteria.

Review of Evaluation Criteria and Associated Program Goals

Together, the goals and evaluation criteria developed in the course of program planning and evaluation present an extensive slate of metrics with which to assess the program's performance and the PAs' effectiveness in implementing the program. For this review and refinement effort, the following questions were posited:

1. Are the goals that the evaluation criteria seek to assess themselves by stated specifically in terms that are measurable, actionable, realistic and time-specific, so that the evaluation criteria can objectively test the extent to which the goals are being met?

2. Are the evaluation criteria concisely developed and specified to focus the evaluation on the most critical issues facing the program, thereby avoiding undue complexity and low-value evaluation activities?

3. Do the evaluation criteria specifically, actionably define performance accountabilities, including distinguishing between what the program and its administrators can influence and factors outside their control?

4. Are the criteria measurable given available information or information that can reasonably be developed, including its data collection constraints and varying ways program information is maintained and reported?

5. Do the criteria state an appropriate schedule that drives timely efforts to measure the performance they are addressing?

Between the Approved Evaluation Criteria set forth in D.01-03-073 and the previous program evaluation efforts, a *total of 29 criteria have been developed by which to assess program progress and effectiveness.* Some of those criteria are more applicable to the program process and impact evaluations.[18]

For the most part, this review found that nearly all the criteria continue to be valid for evaluation purposes. Reviewing them across broad programmatic functional areas finds that the existing criteria cover all the functions from a variety of perspectives. This suggests that additional criteria are probably not necessary, though there appears to be some need for further refinement and detail in the existing criteria to make them more directly applicable to the various program functions. The team asked "Are the criteria that remain specific, measurable, actionable, realistic and time-bound in a manner that complements the goals and strategies with which the criteria are associated?" Appendix B addresses how each criterion could be written to be more specific or

[18]There were 14 criteria per D.01-03-073, plus 7 administrator performance and 8 organizational criteria developed in the 2002-2003 evaluation effort. Twenty-one criteria were applied to the PA Comparative Assessment, per the discussion in the 2003 Itron PA Comparative Assessment report.

more measurable. Generally speaking, the criteria need to have better specified metrics and schedules.

2.6 Secondary Data

Per the research plan, the Summit Blue team conducted secondary research efforts, including review of literature sources, relevant industry documents, and relevant web resources. The documents cover a broad range of topics including air quality, interconnection, legislative history and market specific issues. Sources utilized in the PA Comparative Assessment are listed in Section 7.

The review of secondary literature and data to date is also summarized in a table of best practices in program design, with particular emphasis on issues of concern to the SGIP. The results of this review may be found in Appendix C.

3. PA RESULTS

As context for the PA comparison, a review of the PA program statistics and a summary of best practices as described in Section 3.2 are provided below, followed by the results that pertain to specific research objectives. These main topics for research are presented above in Table 1-2 and include:

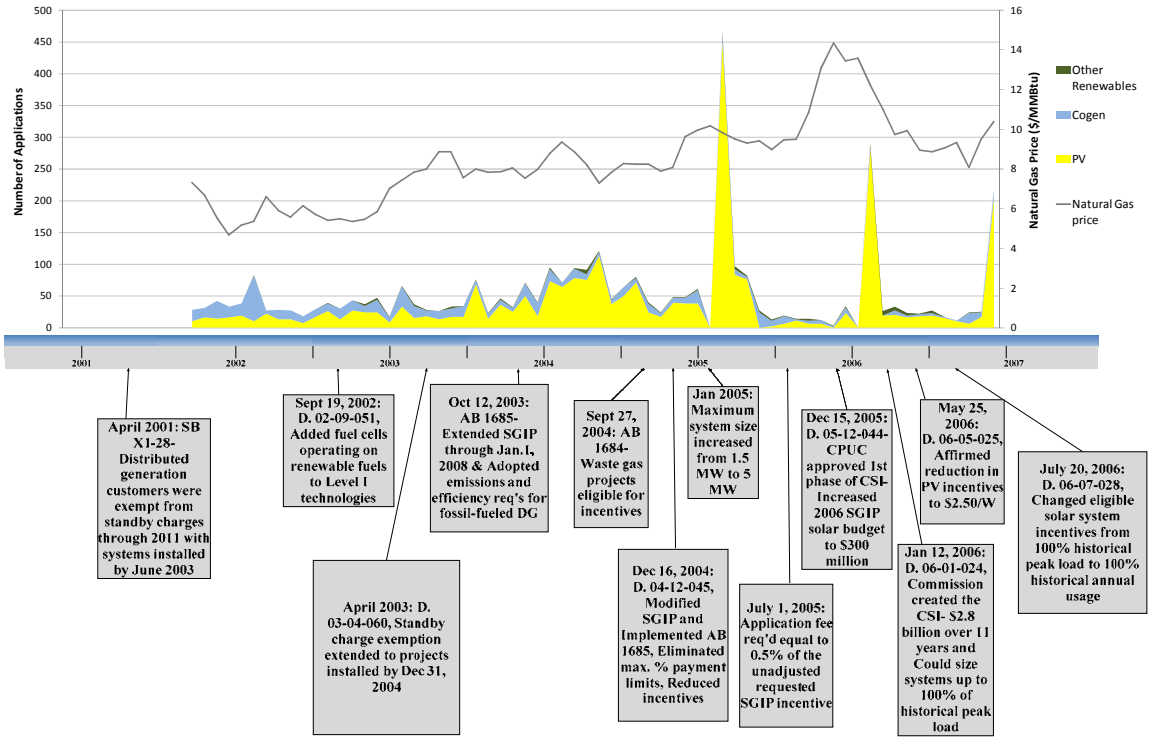
- Administrative Staffing and Organizational Structure
- PA Processes
- Cost Drivers and Budget Management
- Marketing and Outreach

The remaining research objectives, External Market Variations and Implications of Different Approaches, are presented in Sections 4 and 5 respectively.

3.1 PA Projects Overview

As context for the PA Comparative Assessment, it is useful to appreciate the flow of applications in the SGIP and types of technologies promoted by the program. Figure 3-1 below shows the application rate of projects by type over time, along with several key program developments, as well as the price of natural gas. It is apparent that PVs dominate the program in terms of number of applications, and that cogeneration application rates are sensitive to the price of natural gas. Other renewable technologies *on a project basis* account for a small fraction of applications to the SGIP. The application spikes in response to new program year funding in January are also apparent.

Figure 3-1. Applications over Duration of SGIP by Technology and Major Program Decisions



The total installed number of completed projects and capacity by PA are summarized by year in Table 3-1. The results show that PG&E is the largest of the PAs and that SCE, SCG and SDREO have smaller project counts and installed capacity. It is important to note that for later program years, a lower number of completed projects is to be expected because the median days to project completion is 517. The demand impacts of the SGIP over the program's lifetime by PA and technology type are shown in Table 3-2.

Table 3-1. Completed Projects by Year

Year	PG&E		SCE		SCG		SDREO	
	Projects	kW	Projects	kW	Projects	kW	Projects	kW
2001	24	6,230	8	2,803	18	6,909	20	5,217
2002	77	23,082	38	10,033	60	19,955	12	2,660
2003	124	24,872	66	13,392	35	19,599	30	4,950
2004	170	33,637	121	17,214	25	3,729	46	7,256
2005 (as of 12/31/06)	39	15,654	10	2,714	8	5,361	11	6,830
2006 (as of 12/31/06)	5	1,440	-	-	-	-	1	50
Program to Date	**439**	**104,915**	**243**	**46,156**	**146**	**55,552**	**120**	**26,964**

Table 3-2. Summary of Demand Impacts by Technology

PA	System Type	Completed Projects	System Capacity (kW)	Host peak demand (kW)
PG&E	PV	311	43,685	215,785
	Ren ICE	6	3,770	7,598
	Ren MT	9	1,420	3,209
	Non Ren ICE	73	45,157	91,246
	Non Ren MT	32	4,740	20,754
	Non Ren Gas Turbine	2	2,593	4,257
	Non Ren Fuel Cell	6	3,550	15,069
PG&E Total Estimated Impact		**439**	**104,915**	**357,918**
SCE	PV	172	18,569	49,219
	Ren ICE	1	500	860
	Ren MT	4	1,040	1,141
	Ren Fuel Cell	2	750	1,572
	Wind Turbine	1	875	118
	Non Ren ICE	38	20,426	38,821
	Non Ren MT	24	3,796	22,893
	Non Ren Fuel Cell	1	200	1,300
SCE Total Estimated Impact		**243**	**46,156**	**115,924**
SCG	PV	70	9,530	51,749
	Non Ren ICE	48	36,451	76,194
	Non Ren MT	26	4,571	27,714
	Non Ren Gas Turbine	1	4,500	4,896
	Non Ren Fuel Cell	1	500	1,524
SCG Total Estimated Impact		**146**	**55,552**	**162,077**
SDREO	PV	85	10,003	53,303
	Non Ren ICE	17	9,225	16,835
	Non Ren MT	15	1,636	9,291
	Non Ren Gas Turbine	1	4,600	6,700
	Non Ren Fuel Cell	2	1,500	2,724
SDREO Total Estimated Impact		**120**	**26,964**	**88,853**

Key to Abbreviations-
PV: Photovoltaics; Ren: Renewable; ICE: Internal Combustion Engine; MT: Microturbine; N/A not available

**These numbers represent installed systems. Operational impacts are discussed in the impact evaluations*[19]

The peak demand impacts by PA are shown in Table 3-3, and the number of completed projects with clean technologies by PA are shown in Table 3-4. PG&E, SCE and SDREO produced a higher percentage of completed projects with clean technologies (74%, 74%, and 71%, respectively) than SCG (48%). PG&E and SCE produced a higher percentage of clean technology capacity (kW) for completed projects (47% and 46%, respectively) compared to SDREO (37%), while SDREO produced a higher percentage than SCG (17%). SCE had the largest range of clean technologies.

[19] See for example, Itron, SGIP Fifth Year (2005) Impact Evaluation Final Report March 1, 2007.

Table 3-3. Impacts on Peak Demand

	PG&E			SCE			SCG			SDREO		
Technology	**Completed Systems (n)**	**Completed Capacity (kW)**	**Peak Demand Impact[2] (kWp)**	**Completed Systems (n)**	**Completed Capacity (kW)**	**Peak Demand Impact (kWp)**	**Completed Systems (n)**	**Completed Capacity (kW)**	**Peak Demand Impact (kWp)**	**Completed Systems (n)**	**Completed Capacity (kW)**	**Peak Demand Impact (kWp)**
Photovoltaic (PV)	311	43,685	27,478	172	18,569	6,648	70	9,530	3,412	85	10,003	2,001
Wind Turbine	-	-	-	1	875	481	-	-	-	-	-	-
Fuel Cell (Renewable)	-	-	-	2	750	(53)	-	-	-	-	-	-
Fuel Cell (Non-Renewable)	6	3,550	3,479	1	200	196	1	500	490	2	1,500	1,470
Engine, Microturbine, Gas Turbine	122	57,680	36,338	67	25,762	16,230	75	45,522	28,678	33	15,461	9,740
Total Estimated Impact	439	104,915	67,295	243	46,156	23,503	145	55,402	32,486	120	26,964	13,211
Admin. Cost per kW of peak demand impact[1]		$70	$108		$54	$106		$52	$89		$96	$197

[1]The administration costs include all administration costs from PY01 to PY06. The Admin. Cost per kW of peak demand impact overestimate the actual costs because the administration costs include administering projects that ultimately were withdrawn or rejected, and the peak demand impact only includes projects that were completed as of PY06.

[2]The peak demand impact is derived from the unit demand impact (kWp/kW) given in the Fifth Year Impact Evaluation Report (Itron, CPUC Self Generation Incentive Program Fifth Year Impact Evaluation Final Report, March 1, 2007). The unit demand impacts for photovoltaics are from Appendix A, Uncertainty Analysis for Impacts Estimates and for each PA are the following: PG&E: 0.629; SCE: 0.358; SCG: 0.358; and SDREO: 0.2. The unit demand impacts for non-photovoltaic technologies are from Table 1-3 and are the following: Wind Turbine: 0.55; Fuel Cell (Renewable): -0.07; Fuel Cell (Non-Renewable): 0.98; Engine, Microturbine, or Gas Turbine: 0.63.

Table 3-4. Clean Power Completed Projects

	PG&E				SCE				SCG				SDREO			
Technology	**Apps**	**% of Complete**	**kW**	**% of Complete**	**Apps**	**% of Complete**	**kW**	**% of Complete**	**Apps**	**% of Complete**	**kW**	**% of Complete**	**Apps**	**% of Complete**	**kW**	**% of Complete**
Photovoltaics	311	71%	43,685	42%	172	71%	18,569	40%	70	48%	9,530	17%	85	71%	10,003	37%
Renewable Fuel Cell	-	0%	-	0%	2	1%	750	2%	-	0%	-	0%	-	0%	-	0%
Wind Turbine	-	0%	-	0%	1	0%	875	0%	-	0%	-	0%	-	0%	-	0%
Renewable Internal Combustion Engine	6	1%	3,770	4%	1	0%	500	1%	-	0%	-	0%	-	0%	-	0%
Renewable Microturbine	9	2%	1,420	1%	4	2%	1,040	2%	-	0%	-	0%	-	0%	-	0%
Total of Clean Technologies	326	74%	48,875	47%	180	74%	21,734	46%	70	48%	9,530	17%	85	71%	10,003	37%

3.2 Program Design Best Practices

Per the research plan, the Summit Blue team conducted a brief review of program design best practices that would apply to the SGIP. This section provides a summary of key findings and highlights corresponding to best practices in each of the research topic areas of: administration, organization/staffing, cost management, and marketing. A more thorough discussion is located in Appendix C.

Administration

- Market preferences and dynamics change over time due to both program impacts and external influences. Strong program plans anticipate market changes by providing sufficient flexibility to identify and manage opportunities and problems over the course of the program life cycle. The SGIP's provisions to allow for shifting of funding between program levels based on market demand is one example of this.

- Quality assurance should be an explicit part of the administrative process, reaching throughout the elements of program administration.

- Programs often experience inordinate participation delays because the "paperwork" is too complex, or the information being required is not readily known or available. This increases the levels of effort to participate. This difficult situation can be mitigated by actively minimizing the amount of paperwork applicants must submit.

- Timely processing of program intake information demonstrates a quality approach to participants, helping to gain their respect and subsequent cooperation with the program.

- Program information requirements need to be explicitly documented and planned.

Organization/Staffing

- Energy programs fundamentally rely on marketing and sales functions and should be organized around those functions with program management.

- Staffing should be considered from a cost-benefit perspective, whereby if the program's economics support additional staff, the staffing needed to do the job should be deployed almost regardless of what a head-count policy would otherwise dictate.

- Excellent programs include dedicated efforts to demonstrate leadership at all levels, from entry-level administrative staff to top management. Leadership at the staff level will focus on being proactive in the various program functions: meeting deadlines, actively seeking continuous program improvements, regular "cross-talk" with staff members to address problems before they require escalation to management, etc.

- For program managers and professional staff, leadership includes external outreach activities through attendance at conferences, trade shows, and even calling on key customers and trades individually and in collaboration with field sales staffs where so organized.

- Leadership at upper management levels includes selected market outreach activities in support of program managers and professionals. It involves active communications with other top managers in the organization as a champion of the program, to maintain the program's visibility and ensure other parts of the organization are fulfilling their program support commitments.

- Part of the leadership function is to actively budget for and otherwise support staff training. Including training as part of individual performance planning is one way to address this need, but it has to be supported financially and with a commitment to the time needed away from the job.

- Link staff pay and performance in some fashion to focus staff attention.

Cost Management

- Sufficient funding and funding stability are key to program success and an element of best practices. These provide important signals to the market that the program will be active long enough to make it worth promoting appropriate technologies (for trades) and for developing the case for investing in the technology. This is especially true where customers require multi-year periods to plan, budget, build and operate the associated equipment, like the SGIP.

- Program budgets are made more effective at achieving program goals by targeting the right market segments with the appropriate messages.

Marketing

- The program development process should ensure adequate development of marketing collateral, i.e., brochures, Web sites, trade event materials, etc. Best practices will ensure all collateral is internally consistent, yet complementary and not redundant so that the cost of marketing communications is minimized.

- The collateral developed has to be aligned with how customers and supporting trades prefer to learn about the program. It needs to be effective in continuing to inform them through the point at which they decide to participate and beyond, to support and integrate their participation decision.

- Programs with clearly identified single points of contact reduce confusion and have higher credibility with stakeholders.

- Establishing marketing and sales calendars is useful in that it explicitly juxtaposes all the key activities of the program so that they may be best coordinated for optimizing resources, for notifying associated organizational functions of needed support, and for coordinating communications with the market.

- Best-practice promotions highlight non-energy as well as energy program benefits without exaggerating or overselling those benefits.

- Community leaders and public entities can lend further credibility to the program by their endorsement of the program.

- Co-marketing is a powerful method to increase the credibility of outreach efforts and to leverage additional marketing channels. Co-marketing allows a program to leverage the visibility, brand recognition, and channels of the co-marketing partner group.

3.3 Administrative Staffing and Organizational Structure

Staffing Approach

Generally, the PAs each use dedicated staff for program administration. Those staff members each have specific areas of responsibility related to program content and job function expertise. PG&E and SDREO have perhaps the most diversified staff dedicated to the program.

- Under the umbrella of CSI and SGIP, five employees report to *PG&E's* SGIP Manager (the PA representative at the WG). One of these individuals is the marketing lead for the group.

- Similarly at *SDREO,* three employees report to the SDREO PA at various levels from manager to assistant. The marketing function is staffed in a consultative fashion, residing in the SDREO but not as a dedicated SGIP staffer.

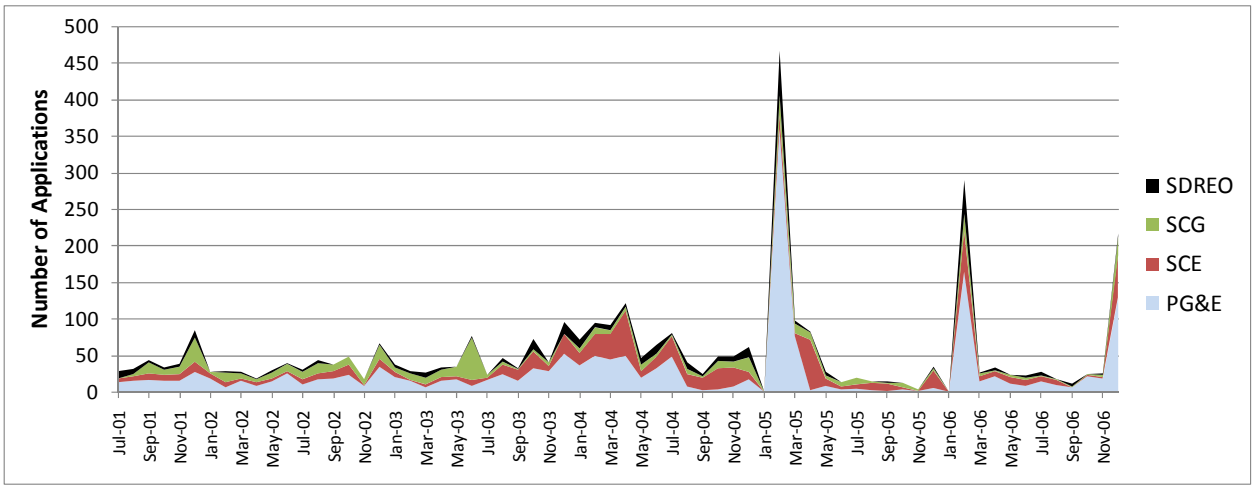
- For *SCG,* two program managers work with the WG liaison and SGIP manager as well as one dedicated administrative assistant. At SCG the marketing and outreach function is handled by each SGIP manager, but SCG is unique in that incentives are provided to key account reps to bring in SGIP projects.[20]

- *SCE* has two people fulfilling all responsibilities including, application processing, marketing, and management functions (e.g., WG representation). During periods of high work flow, temporary labor from the SCE temp pool is brought in to help.

Most PAs report some concern over staffing uncertainty in the face of the changing program scope and size. This leads to some difficulty in projecting how many people are needed and retaining competent staff. This is a particular concern of SCG, in that they will experience a reduction in project flow because they will no longer administer new PV projects after 2006 and will no longer administer nonrenewable cogeneration projects (Level 3) after January 1, 2008. Pulses in applications can also be difficult to process. For example, several PAs reported being surprised by how many solar applications were received in December of 2006 before solar transitioned to the CSI. The monthly applications over the lifetime of the program by PA are presented below (Figure 3-2).

[20] The account executives were offered incentives for 2001 to 2006 except 2004. Incentives ranged from: $1.00/kW for signed SGIP applications submitted by account executive to $4.00/kW for SGIP project installed where account executive submitted original application. The incentives were capped at 400 kW per SGIP project, with total incentives for each account executive capping at $8,000 per year ($4,000 for Senior Account Executives). In 2002, incentives dropped by half per kW, and total payout to all account executives was capped at $75,000. Incentives increased again in 2003 up to $1.50 per kW, but increasing navigation assistance was required. Size caps for incentives increased to 600 kW and total project incentives to all account executives increased to $100,000. In 2004 there was no incentive. In 2005 and 2006, the incentive reduced back to $1.00 per kW and each account executive was capped at $5,000 in incentives, with individual project incentive caps at 1,000. After 2002, account executives did not earn incentives on projects that also received LADWP incentives.

Figure 3-2. Applications to SGIP by PA



Staffing appropriately must also be seen as a function of how many applications are active at any one point in time. This makes periods of program growth difficult to staff for, because most applications are not completed in the same calendar year as the application was tendered, and new applications are coming in, sometimes in large pulses, so the total project load can increase substantially. If the PA predicts correctly that project deal flow will continue to increase, they can staff up – as in the case of PG&E. Staffing in the face of the CSI transition, and management of staffing and training will likely be an ongoing concern. To address the growth issue and staff training issue, SDREO created an internal SGIP procedure manual to document SGIP processes at SDREO. Other PAs may benefit from this approach to managing organizational growth and stability. However, it may be problematic to burden the PAs with additional processes, such as calling for an internal procedure manuals – particularly for those PAs experiencing declining project volume, such as SCG. However, creating knowledge silos, though apparently necessary during times of quick program expansion can also be problematic. For example, at SCE, the program knowledge base is almost entirely located with one key individual. This could prove risky in the long-term, both for succession planning and growth of the CSI at that organization.[21]

Internal Support

Comparison of structural support within the PA is useful because each PA is organized quite differently in terms of cost accounting for internal support functions. As a result, a simple comparison of reported expenditures may not be an accurate reflection of program support. For example, PG&E reports the program is charged for each Web site modification by the IT department, while SCG doesn't get charged for such efforts.

Another related aspect of internal support is that of interdepartmental coordination at electric utility PAs. This type of coordination and external coordination at SCG and SDREO does continue to be seen as a challenge, especially with regard to interconnection. Host customers expressed significant impact from coordination issues and consistent support. These issues are covered in greater detail in Section 4.3.

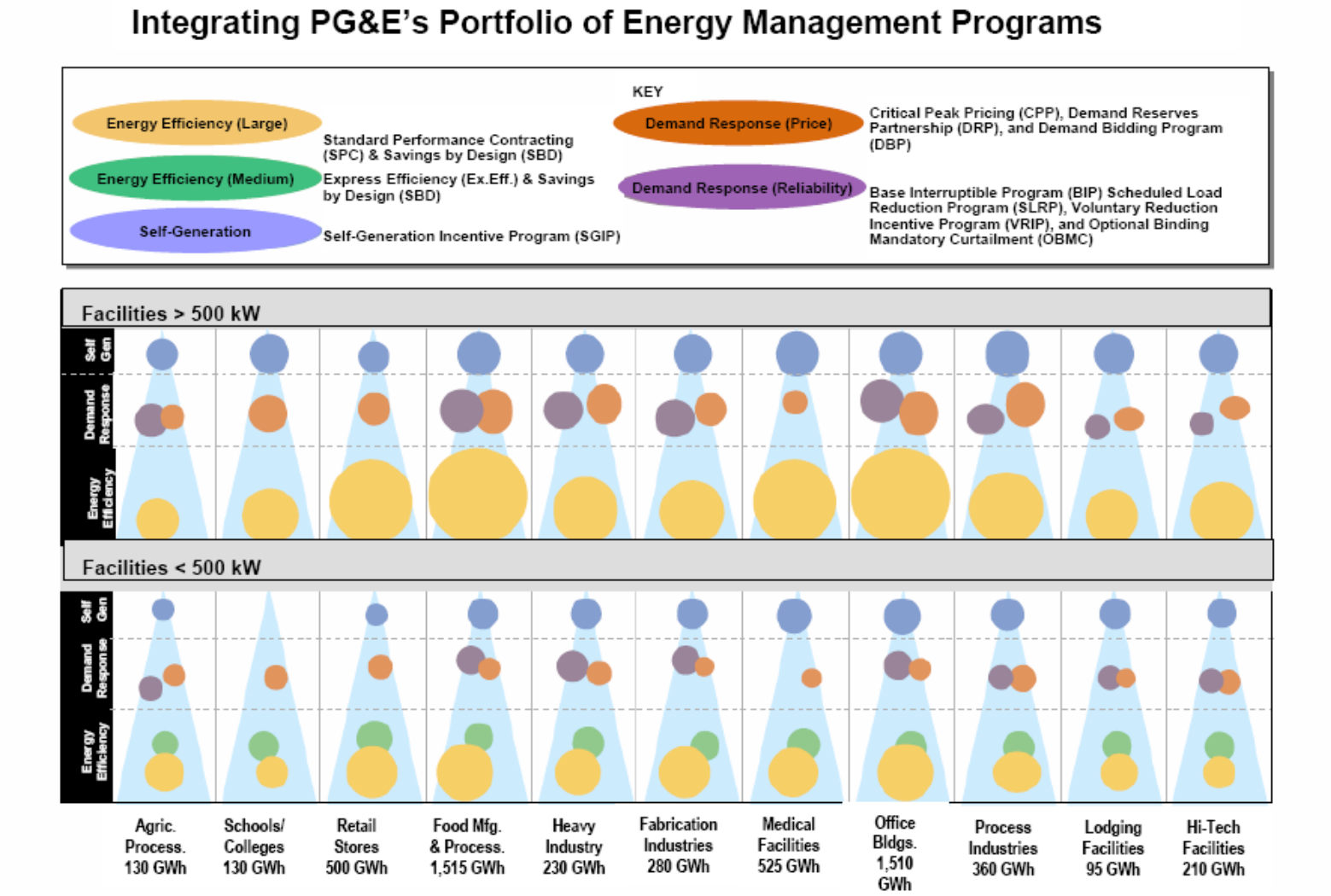
PG&E is addressing the issue of coordination in part through a company wide "transformation" process and cited efforts to improve internal customer services that should result in more interdepartmental

[21] Unlike most other PAs, the CSI will be managed at SCE by a new staffer, instead of transitioning a SGIP manger or PA to that role.

coordination. PG&E staff report that the SGIP has increasingly received "top down" support, and the program is perceived as one of many customer service functions provided. PG&E has published their approach to Integrated Demand Side Management (IDSM) that includes and evaluates SGIP markets by sector as well as how the program interacts with other energy efficiency and demand response offerings (see Figure 3-3). [22] On the other hand, a Program Advisory Group materials review for SCE does not reveal the same level of institutional planning and inclusion. Thus, a strict cost accounting on the issue of institutional support may not provide the best understanding of true structural support at the PA's organization. SCG also reported significant internal support for the program. SDREO also reported that the consistency of the SGIP and the SDREO's general sustainability mission was a key driver for their organization and that their Tax-Exempt Customer Incentive Program (TEC), a public entity program, was a natural feeder of projects to the SGIP.

[22] In fact, market potential analysis for SGIP by market sector, were part of a recent PG&E Program Advisory Committee Meeting Presentation by Michael Alexander (2/05). Available at: http://www.pge.com/docs/pdfs/rebates/program_evaluation/advisory_group/PubWkshop1_Handout7.pdf; Similar presentations of SCE's approach include references to integrating SGIP, but little else.

Figure 3-3. SGIP and IDSM Integration at PG&E



te: Size of circle is illustrative of potential market for each program within a given sector. See market segment sheets for background and market potential data one each C&I category.

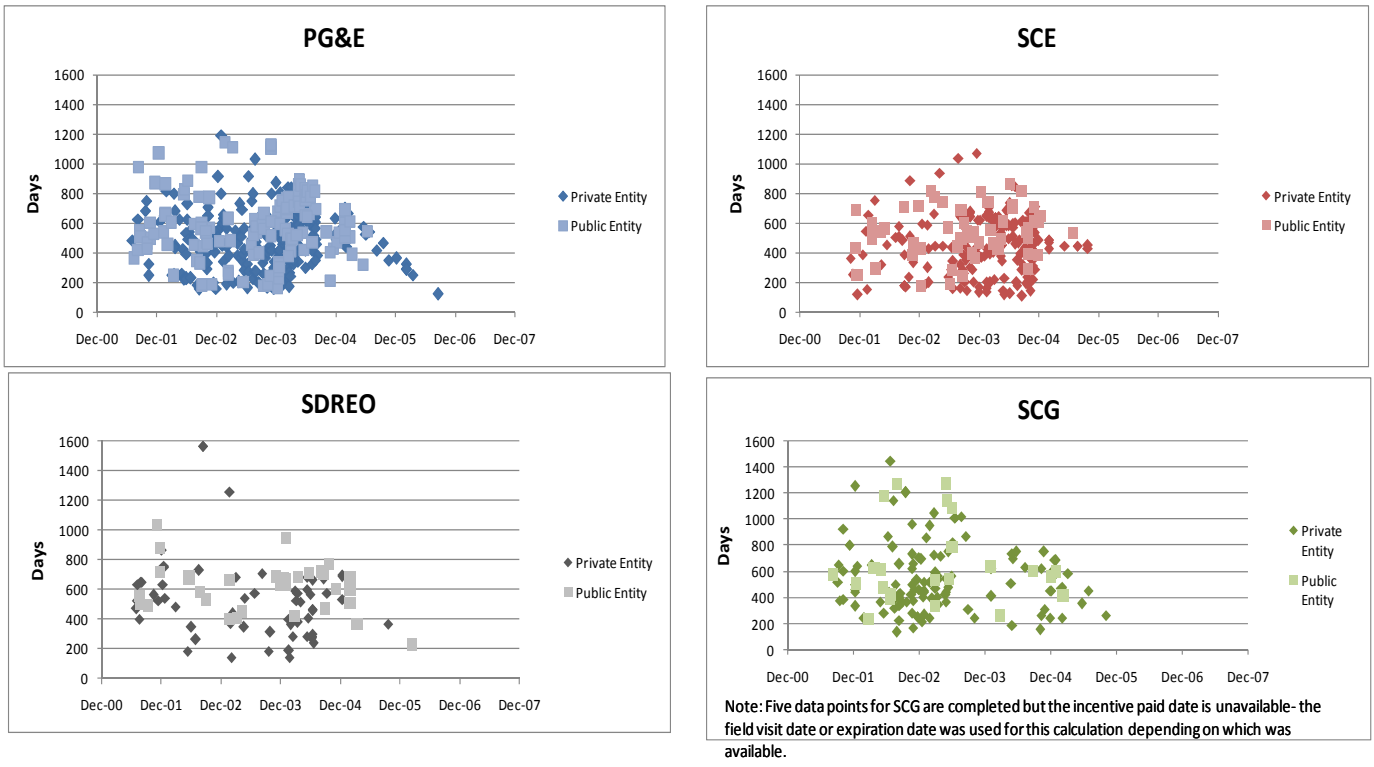
3.4 PA Processes

This section presents a comparison of Administrative Processes and other non-staffing organizational issues uncovered by the team during the course of the study.

Administrative Processes

The SGIP handbook lays out the time frames by which projects must navigate the SGIP process, and though variations exist at the PA level on disbursement speed, the total time to navigate the SGIP is fairly similar as shown in Figure 3-4. Some variation is apparent, e.g., early organizational and coordination issues were more pronounced at SDREO than the other PAs. Other results are less obvious, e.g., SCE does on average move applicants fastest through the process. Note that the apparent trend of applicants to move through the process quicker over time is actually a function of the data boundaries. Recent applicants that took longer than average would not be represented in this project data set, which includes only completed projects up through December 2006.

Figure 3-4. Completion Times for Each PA Broken by Private and Public Entities Based on Date of Application.

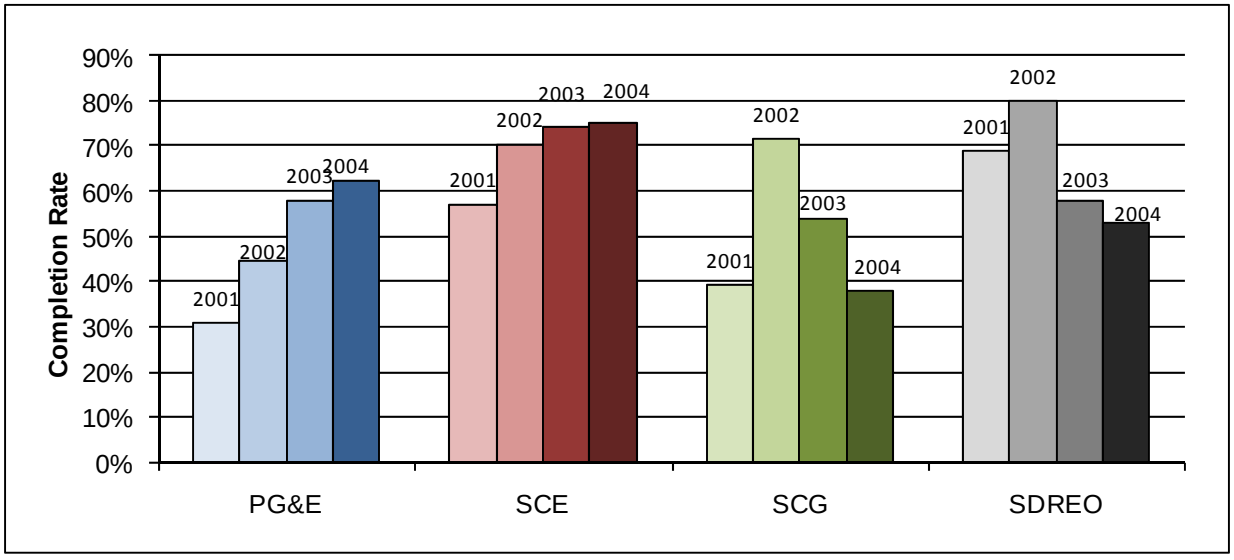


**Note that some longer completion times may be a function of wait listed applicants obtaining permission to proceed after some time has passed.*

Among other project time frames specified in the SGIP Handbook, the Handbook indicates a disbursement turnaround goal of 30 days from date of application. PG&E has been working to accelerate this with a goal of payment within 12 days from funding incentive application request.

It is worth noting that while each of the PAs have internal performance metrics, only SCE's program staff noted being personally evaluated based on customer response times. This could be one factor in SCE's applicants completing more of the SGIP milestone stage gates. The graph below shows the percentage of applicants that have progressed from conditional reservation letter to incentive payment by project year of application.[23] Note that these data also do not show the effect of the application fee instituted in July of 2005. It is also important to note that the loss of only a few projects or a multiple site project developer can disproportionately affect smaller PAs such as SDREO and SCG on a percentage basis.

Figure 3-5. Percentage of Projects Completed from Conditional Reservation Letter to Incentive Payment by PA and Year



The PAs appear to be handling project extensions – which are key to project completion rates – consistently, though this is somewhat difficult to evaluate retrospectively. Several PAs reported a general consensus that extensions should be allowed after the confirmed reservation letter has been issued because substantial proof of project advancement is demonstrated at this stage gate. There appears to be consensus on the need to agree at the WG level on what kinds of extensions should be given (for situations not anticipated in the handbook) so that the program is fairly administered across the state. However, in that extensions do appear to be regularly given, this process can seem somewhat ad hoc to outsiders, especially host customer applicants as opposed to more sophisticated developers.

Dropouts are few once the confirmed reservation letter has been issued. SCG views the dropout rate as a function of basic project economics. As SCG has a significantly greater percentage of cogeneration projects in their project mix they appear to be hardest hit by the increases in natural gas price and will also likely be impacted by increasingly stringent air emissions constraints in 2007. More information on air

[23] The reservation request application was not deemed a useful metric because of high early drop rates from phantom projects. Note also that project data from 2005 and 2006 were not included because it is difficult to project completion rates for these recent years.

regulation is contained in Section 4.[24] Project economics may also be in play for SDREO where tariffs are less solar friendly. Further information on tariff issues is located in Section 4.3.

Most project developers interviewed report handling nearly all of the application process for customers, with only two out of 26 developers acknowledging real customer knowledge of the application process. Individual applicants do appear to have trouble navigating the system for the first time, but developers appear to understand the program requirements.

The application fees generally are liked by the PAs and appear to have reduced the phantom and premature project applications but the extent of the effect is unknown. For example, the surge in applications in 2005 could have been due in part to knowledge that an application fee would be instituted (seeFigure 3-2).

There have been some documented difficulties matching up meter information for project applications. For example, a multiple connection campus type applicant to SCG installed the project on a building that did not have gas service (a requirement to obtain incentives from SCG). After consulting the WG, this project was transferred to SCE.

SDREO has added the administrative coordination challenges that other PAs do not have. For example, billing information is handled by SDG&E, and it is a necessary piece of documentation for SGIP applications. SDREO makes use of the SDG&E's web based billing analysis tool Energy Waves[25] to help customers understand their energy options and also conducts free site screening analyses for SGIP prospects to find out if SGIP is "right for" them.[26] Customers routinely provide the password to SDREO to expedite account information documentation. The SDG&E process also differs significantly in that they require net generation output meters on their installations. As a result, they have a large dataset available to help understand long term retention and system operating characteristics that may prove valuable for the development of case studies and, potentially, operations and maintenance advice. An additional difference in the SDREO process, is counseling on project right-sizing. For example, with respect to cogeneration projects, the SDREO has a system that they use to help size units appropriate to customer needs rather than incentive. SDREO also reported working to train new owner/occupants where properties have changed hands, in an effort to maintain a system as operational after a real estate transaction.

Final project close out differed somewhat between PAs, with PG&E appearing to make the most of the opportunity for free and earned media. PG&E focus group participants mentioned the value of the check presentations and how exciting it was to be presented the oversized check, and public entities in particular appeared to appreciate this extra effort.

3.5 Cost Drivers and Budget Management

PG&E and SDREO staff expressed some concern regarding budget allocations for multi-year projects. For example, how much budget should be retained to administer projects in the system but not yet complete? Currently administration costs are capped at 10% with up to 5% going to M&E. However, all PAs report that applications from previous years are still active. Most projects take more than one calendar year to get from application to payment, but incentive funds are encumbered and attributed to the year the project applies for funds. Because administrative costs are tracked by calendar year they may not

[24] Figure 3-1 above shows reduced cogeneration applications during periods of higher gas prices.

[25] http://www.sdge.com/business/energy-consumption.shtml

[26] SDREO Web site at: http://sdreo.org/ContentPage.asp?ContentID=149&SectionID=69&SectionTarget=35

match up readily to the number of projects in a given year. For example an application filed at the end of 2003, but completed in 2005, would require administrative dollars over three years, while incentive costs are tracked to one project year. These effects must be kept in mind when viewing the numbers in Table 3-5 below.

Table 3-5. Program Expenditures by PA.

All Expenditures in Millions of Dollars	Actual Expenditures (End-of-Year Encumbered)						
	2001	2002	2003	2004	2005	2006	To Date
PG&E							
Total Incentives Paid	$9.2	$35.3	$52.6	$87.5	$20.7	$5.1	$210.4
Administrator Costs	$0.3	$1.2	$1.3	$1.2	$1.4	$2.0	$7.3
M&E Costs	$0.0	$0.2	$0.3	$0.7	$1.1	$0.5	$2.9
Total	$9.5	$36.7	$54.2	$89.4	$23.2	$7.6	$220.6
Admin Cost as a % of Total Budget*	**2.8%**	**3.2%**	**2.5%**	**1.3%**	–	–	–
SCE							
Total Incentives Paid	$2.0	$12.0	$26.0	$52.0	$4.1	$0.0	$96.0
Administrator Costs	$0.2	$1.0	$0.4	$0.3	$0.4	$0.2	$2.5
M&E Costs	$0.0	$0.1	$0.5	$0.6	$1.9	$1.1	$4.3
Total	$2.2	$13.1	$26.9	$52.9	$6.4	$1.3	$102.8
Admin Cost as a % of Total Budget*	**9.1%**	**7.6%**	**1.5%**	**0.6%**	–	–	–
SCG							
Total Incentives Paid	$4.0	$19.0	$13.9	$7.2	$2.8	$0.0	$46.9
Administrator Costs	$0.5	$0.4	$0.6	$0.4	$0.4	$0.6	$2.9
M&E Costs	$0.0	$0.1	$0.1	$0.3	$0.4	$0.1	$0.9
Total	$4.5	$19.4	$14.5	$7.9	$3.6	$0.7	$50.7
Admin Cost as a % of Total Budget*	**11.8%**	**1.9%**	**4.0%**	**5.4%**	–	–	–
SDREO							
Total Incentives Paid	$8.5	$2.8	$10.3	$19.8	$7.8	$1.0	$50.1
Administrator Costs	$0.2	$0.5	$0.5	$0.4	$0.4	$0.6	$2.6
M&E Costs	$0.0	$0.1	$0.1	$0.2	$0.2	$0.2	$0.7
Total	$8.7	$3.3	$10.9	$20.4	$8.4	$1.8	$53.5
Admin Cost as a % of Total Budget*	**2.5%**	**14.0%**	**4.5%**	**2.0%**	–	–	–

**A*dministration cost as a percentage of total budget for 2005 and 2006 and the program to date were not calculated. It would be necessary to project completion data for 2005 and 2006 from a limited set of base data from previous years for some technologies. With so many projects not yet complete for2005 and 2006 the Summit Blue team deemed that it was not possible to accurately forecast these completion rates, and thus the administration percentages.*

In general, SGIP administrative costs are well under 5%, especially as the program has matured. However, as PV transitions to the CSI, where smaller projects will be included, processing costs could be more difficult to constrain. The experience of the CEC's Emerging Renewables Program, a high volume, lower incentives and unit size program, would support this. After internal analysis at the CEC indicated that costs were being driven up by many incomplete applications that created additional labor intensive staff review time, the CEC made a concerted effort to increase the initial approval rate of newly submitted applications. This was accomplished by revising internal business processes such as creating guidelines and criteria to send back incomplete applications. As a result, applicants' compliance to CEC's Emerging Renewables program requirements increased, and the percentage of applications getting it right the first time dramatically increased from 40% to 80%, at substantial processing cost savings.[27]

In terms of specific cost drivers, SCE does not report feeling constrained by costs, except the high cost of internal marketing resources. SCE has a fairly lean operation, and they find they generally have enough money to fund SGIP efforts. While they are not always oversubscribed for participants, they attribute this to the high cost of PV. The Summit Blue team's regression analysis supports this hypothesis (see Section 5), as does research at LBNL, which shows that installed PV costs are higher in SCE and SCG territories.[28] It is not entirely clear why PV costs would be higher in Southern California, though, and additional institutional support at SCE could help create additional demand for SGIP projects. For example, it was observed that while a high number of SCE focus group participants named the SCE PA by name as a helpful resource, the corporate decision to operate in a lean fashion may contribute to limited program leverage in stimulating local market competition that could drive prices down.

At the close of 2006, PG&E was the only PA with a wait list. It may be that the Northern California market is fundamentally different. (In the Northern California focus group a number of participants reported having a residential system at their own home or that a colleague had one. One participant offered evidence that the PV unit on his building helped him sell condos.) Or it may be that installation costs are higher in the Los Angeles Basin.

Another important PA cost driver is the number of public entity participants. In general, installed costs for public entities are higher than other entities, regardless of technology type. Also, public entities have a harder time taking advantage of tax breaks. A typical way to work around this is a power purchase agreement. But having such an agreement can add to the complexity of the project and can also lead to frustration with a PA that may be more appropriately on a developer if projected savings fail to materialize. A summary of tax implications is included in Appendix D.

3.6 Marketing and Outreach

This review covers the marketing and outreach aspects of the SGIP program offerings by the respective PAs. It incorporates evaluation findings from several perspectives:

- PA staff interviews
- Host customer focus groups
- Developer interviews
- Evaluation Contractor Team review of available marketing and outreach materials

[27] Personal Communication, Payam Narvand, Manager, CEC Renewables Program.

[28] *Analyzing Historical Cost Trends in California's Market for Customer-Sited Photovoltaics*, Ryan Wiser, Mark Bolinger, Peter Cappers, and Robert Margolis, Progress in Photovoltaics: Research and Applications, 2006.

Looking retrospectively at 2006, the SGIP was partially successful at reaching its program goals. For example, all of the available program monetary incentives were fully reserved by prospective developers and host customers in PG&E's program. In that context, it may be concluded that PG&E's marketing collateral had the desired effect of achieving the program recruitment and incentive payout goals and the associated targeted MW of electricity resource development. However, the correlation between strength of marketing efforts and full program subscription may not be a simple causal relationship.

The marketing review began by looking at how each PA organized its marketing and outreach efforts. Questions include:

- Did the PAs prepare and vet a formal marketing plan and coordinate marketing efforts either with other PAs or internally in the organization to obtain maximum leverage?
- How did the PAs approach their marketing?
- Are PAs optimally organized to achieve a highly productive marketing and outreach effort?

The review continues by examining the PAs' informational offerings broadcast through a variety of channels:

- PA Web sites
- Hard-copy literature
- Customer and developer training
- Direct outreach efforts including meetings with prospective customers and developers, or industry specific vendor events and sales calls to customers and developers
- Media

Project developers interviewed for this report state that the primary sources of SGIP program information are PA Web sites and direct PA contact, either via email or telephone. Developers also report using the handbook as well, though less often than direct contact with the PAs.

When evaluating marketing and outreach efforts, it is important to remember that the PAs worry that driving potential participants to a program that is likely to be oversubscribed will cause frustration and negatively impact the long-term credibility of the program. This has been a concern in other states with similar programs. For example, in New Jersey, over-subscription of the program created lengthy waiting queues, administrative overload, uncertainty in the marketplace, and very negative publicity for the program.

However, questions that underlie PA marketing and outreach efforts cover the entire spectrum of these functions.

- Do the PA Web sites have concise, relevant information in forms that customers and developers easily understand and can readily apply?
- Do program literature and Web sites provide readers with a strong, positive first impression?
- Do public event participation and outreach efforts provide persuasive and educational information?

- Are program-related general and technical training adequately educating customers and developers?

- Are outreach efforts providing sufficient and persuasive information, including appropriate follow-up?

It is critical to avoid making evaluative conclusions about a given PA's marketing approach simply by looking at the amount of information developed. The quality of the marketing information and dissemination effort is perhaps more important than the volume of information and the types of dissemination channels utilized. Table 3-6 summarizes the scope of the PAs' marketing information collateral.

Marketing Information and Dissemination

Well-planned information marketing efforts provide a means to evaluate the performance of the marketing strategies employed including associated staff performance. For example, a well-designed program brochure may be rendered ineffective if it is not being placed with the right market actors or if there is no plan for distributing the brochure to those people who would be most influenced by it. The value of glossy brochures is questionable because developers report that they seldom use them for their information value, nor do they report incorporating SGIP promotional material or references in their own marketing collateral. However, there appears to be real value in a PA's (or other entities') endorsement of a program:

Clear and accountable plans focus PA resources so that the marketing effort is productive and cost-effective but internal support by the PA's parent organization can substantially amplify these efforts. This review considered each PA's organization for marketing the program and found the following:

- PG&E, SDREO, and SCG each have a somewhat stronger marketing function than SCE.

- PG&E has a dedicated marketing staffer for the program and integrates SGIP, to the extent, possible into their total market approach as an entity.

- SDREO integrates the SGIP into their total marketing approach.

- SDREO has an internal consultative marketing model, but maximizes their Web site as a primary program touch-point and uses it not only to convey information about program *process* but also uses success stories to demonstrate the program's *value proposition.*

- SCG pays incentives to key account managers for project promotion and project completion.

- SCE makes presentations and promote the program, but does not have an organized plan or record of these presentations, as other entities do, making it difficult to compare these efforts.

- Only SDREO has developed several features of an effective Internet presence that other PAs lacked, including "success stories,"[29] developer listings, and self-screening tools. They also direct customers to SDG&E's on-line bill analyzer.

[29] Example "success story" available at http://sdreo.org/uploads/SelfGen%20-%20Case%20Study%20-%20San%20Elijo.pdf

Program Web sites

All the PAs make extensive use of Web sites to provide customers and developers with information about the program, although some PAs appear to make more extensive use of their Web sites for program promotion and information than others. With the caveat noted above concerning quality versus volume of information, it is very difficult to know whether more extensive use of Web sites translates into higher participation levels, more electricity being self-generated, or the program being implemented more cost-effectively.

The PAs' Web sites generally broadcast similar kinds of information, including administrative information and, on three of the Web sites, links to technical and other resources. The SCG Web site has a particularly good section on legislative history and forms that are based on year of application. This is important as developers and applicants often have projects that are subject to different rules, because the rules on sizing, applicability and other issues have changed throughout the program.

For prospective customers, one of the first questions that is often prompted is whether similar customers have had success with SGIP systems, and what the key features and benefits of those experiences have been. Case studies are an efficient way to provide such information to both prospective customers and system developers. For customers who want more specific self-generation system planning and development support, self-service listings of developers can facilitate contact with the developer community. However, utility PAs are reluctant to place developer names on their Web sites because this could be construed as an endorsement.

Program Literature

There appears to be little to differentiate the PAs in terms of hard-copy program literature. In terms of training literature, all the PAs have at least general orientation material used in workshops and other public events and meetings, though PG&E and SDREO appear to put more effort into training. This training literature appears to have been well-developed and reflects the long tenure of the program in that key program changes are well documented. This is important due to the number of program and eligibility changes over the course of the program.

With regard to the SGIP handbook, the PAs have collaborated to produce a well-written program manual. While lengthy in appearance to the lay- person, for seriously interested developers and customers it appears to cover all the critical aspects of the program in a fairly readable manner.

Direct Marketing and Outreach

Each of the PAs has produced informational materials for various outreach events and direct contact with developers and customers. Each has conducted developer and customer workshops to educate prospective participants and others about the program. Based on developer feedback, this function is not as important as it was in early years. Developers, who account for the vast majority of the SGIP deal flow, seem to understand the program sufficiently well. Roughly one-third of project developers report attending a presentation or training session felt that it was helpful. However, many report that they have not recently attended one because that they are focused on learning about the CSI. If they need information, they report that they consult the Web site or contact PA staff for information.

In addition, because the program is technical in nature, there is a need for clear program information. Additional case study work to help tailor the program information to particular developer/customer situations (e.g., grid interconnection, or roof warranty issues with respect to solar installations) could address the unique, technical challenges faced by end users and developers. There appears to be some

desire for a "users group" where program information and project experiences could be exchanged. After every focus group with host customers, tips and business cards were exchanged by participants. Participants expressed a desire to have information that would help them anticipate some of the technical surprises that can arise in the process such as concerns with roof warranties with solar installations..

Target Marketing

If done well, target marketing to a specific segment can reduce costs, while increasing leverage and credibility within that segment. For example, SDREO identifies and targets non-participant groups and develops strategies to reach that group. During early years of the program, minorities, churches, and non-profit organizations had low participation rates. SDREO focused on one low participation group each year to boost their participation. For example, when farm groups became eligible for SGIP with waste gas technologies, SDREO helped negotiate financial support from the digester industry.

It is often concluded that the relatively high representation of public entities in completed projects in SDREO's territory reflect the large number of public entities and military bases. However, demographic data do not fully support this conclusion. It is more likely that as a non-profit, SDREO speaks the language of the public entities and is a member of the networks that are designed to promote or envision projects, almost jointly. Moreover, they are consciously aware that their Tax Exempt Customer Incentive Program is a feeder program to the SGIP.

PG&E has also identified the sector specific needs by market sector that the SGIP can serve, as described above in Figure 3-3. For example in the lodging industry self generation is targeted to the cogeneration potential at large facilities with sizeable thermal demand (e.g., hot water, heating, full-service kitchen, laundry, and swimming pools).

Program Awareness

Approximately half of all project developers interviewed report that customer awareness about the SGIP program is very high, though they may not refer to it by name. About 25% of project developers rate customer awareness more moderately, and another 25% say that most host customers do not know of the program. Of those rating customer awareness very high, most also believe that customers do not understand the program, and that no single market segment understands it better than the others. In the aggregate, the project developer interviews did not reveal different levels of customer awareness by PA or by customer segment. While interviews are no substitute for a quantitative analysis of market sectors, it useful to note that the developers are not seeing one market that is particularly more aware of SGIP than others.

Given the reported substantial awareness of SGIP by the customers, it is somewhat surprising that very few developers report mentioning SGIP by name in their marketing materials. However, when host customers were asked how they heard about SGIP or how they became interested in the program, there did appear to be some differences between the PAs.[30] Those differences between the PAs are described below.

[30] It is important to note that focus groups are qualitative in nature and may suffer from selection bias. Thus these results should not be treated as conclusive evidence on this issue and future surveying may shed additional light.

PG&E

Though participants had heard about the program from a few different sources, the majority of participants became interested in self-generation through word-of-mouth from colleagues or peers. For the majority of participants, a pre-existing interest in self-generation was reinforced when they heard about the SGIP from contractors and other marketing materials.

SCE

A few participants responded that they learned about the SGIP through SCE representatives. Other participants approached SCE to gain information about installing a system. Contractors also approached a few participants and made them aware of the incentives.

SCG

Participants learned about the program from a range of sources including program representatives, account managers, installers, and the newspaper.

SDREO

The participants in SDREO's area learned about the program from their developer, account executives at SDG&E, conferences, seminars and presentations by SDREO, and other vendors and energy consultants.[31]

[31] It is possible that participants in the focus group interchanged SDREO's and SDG&E's names on occasion, as at least one provable instance of this was recorded.

Table 3-6. Summary of Marketing Collateral

	PG&E	SCE	SCG	SDREO	Comments & Potential Issues
Marketing Management					Collateral for managing marketing and outreach activities; proactive "plan/do/check" management; associated staff performance reviews
Integrated Marketing	X		X	X	Organized approach to deploy resources and assess performance
Events calendar - trade shows, training, etc.	X			X	Orchestrate staff resources
Program Web site					Recentness of updates, site "sensibility," ease of navigation, user-friendly scripts & presentation
Program Overview, News & Contact Information	X	X	X	X	Succinctness, relevance, clarity of organization, ease of use
Administrative Documents - Application Forms, etc.	X	X	X	X	Convergence of various administrative elements; clarity and ease of use
Technical & Training Information; Related Links	X		X	X	Convergence of various technical matters; clarity, relevance and ease of use
Case Studies & Testimonials				**X**	Convergence of various target markets and market actor perspectives; dissemination efforts
Cross-marketing Information (EE, DR, etc.)			X	X	Coordination with other marketing collateral
Other Related Information Links	X		X	X	Coordination with other marketing collateral
Press releases – electronic		X	X		Coordination with other marketing collateral
Vendor listings & contact information				X	Recentness of updates, accuracy of information
Program Literature					
Brochures	X	X	X	X	Level & organization of information, visual appeal
Sell sheets	X	X	X		Sufficiency and succinctness of information; segment-differentiated
Customer & Developer Training					Number and quality of training events
Training information: Announcements, materials	X			X	Use of feedback to assess training usefulness & guide future training efforts
General orientation material	X	X	X	X	Identification of leads and subsequent follow-up to address non-technical barriers
Technical training material				X	Follow-up to address technical & economic barriers; depth of technical detail is appropriate to customer & developer needs

	PG&E	SCE	SCG	SDREO	Comments & Potential Issues
Program handbook	X	X	X	X	Timely updates; logical organization & ease of understanding
Direct Marketing/Outreach					Volume and quality of effort within target market segments
Event materials - displays, presentations	X	X	X	X	Number of recent events, follow-up recruitment efforts, feedback solicited on event effectiveness, coordination among PAs
PA/Utility Account Mgr sales calls - Individual customers			X	X	Appropriate segment targeting; number and depth of sales calls; follow-up information & technical support to address barriers; program recruitment results
Program Staff sales calls - Developers, distributors & manufacturers				X	Coordination among PAs; number and depth of sales calls; follow-up technical support & information to address barriers; program recruitment results
Government & institutional meetings	?	?	?	X	Decision makers other than facilities staffs; follow-up technical and other support information
Customer/Developer workshops	X	X	X	X	Number of recent events, recruitment efforts & targeting; resulting active leads
Customer & Developer recognition events	X	X	X	X	Coordination with other program promotional activities including case studies & testimonials

4. EXTERNAL MARKET VARIATIONS

The PA Comparative Assessment includes a discussion on external variation analysis because there are distinct external issues that impact the SGIP. Even though SGIP PAs are limited in directly influencing these external issues, they can play a role in alleviating some of pain and surprise these issues cause SGIP project developers, host customers, and other stakeholders.

Given the lack of information on the reason why SGIP projects are withdrawn, the need for an examination of these issues becomes even more important. To date, more than 1,000 projects submitted to SGIP PAs have subsequently been withdrawn from consideration. Withdrawal rates after conditional reservation letters are issued typically range from 20 to 40% in any given year. *Appendix E provides detailed insight on external market variations including air emissions regulations, building construction regulations, interconnection and tariff issues, and demographics.* The main topics of the external market variations are summarized below.

4.1 Air emissions regulations

In late 2001, the California Air Resources Board (CARB) approved a guidance document, in response to SB 1298 legislation, for best available control technology (BACT) for small combustion power generation sources. The emission levels in this guidance document, formally issued July 2002, served as the basis for the emissions requirement of the SGIP. The emission requirement was readily met by adding on catalyst control systems. However, obtaining an air quality permit in the State of California, for some, can be a time-consuming and complex task. If developers do not have a clear understanding of an air district's milestones, application requirements, and approval process, inevitably there will be delays in obtaining the approvals to begin construction and operations.

The SGIP application guidelines state that as of January 1, 2007, projects requiring an air permit must meet the country's most stringent NO_x emission level (0.07 lbs/MWh with or without an efficiency credit) – a level that is approximately one-half of the past year's requirements. This level is required of all combustion-related technologies that must obtain a permit, irrespective of fuel type and other operating characteristics (e.g., annual hours). This NOx emission standard was introduced in AB 1685, which was Chaptered in October 2003. AB 1685 stated that commencing January 1, 2005 all combustion-operated distributed generation projects must meet a standard of 0.14 lbs/MWh, and commencing January 1, 2007 all these distributed generation projects must meet a standard of 0.07 lbs/MWh.

For the SGIP program, this NOx emission standard is the only air quality-related requirement. Other pollutant emission levels are not limited, and specific permit conditions are not mandated. However, as part of an air permit application process, the exhaust emissions of NO_x and other criteria pollutants are evaluated to ensure that BACT is applied, where applicable and achieved in practice. Other pollutants the AQMDs review are carbon monoxide (CO) and volatile organic compounds (VOCs).[32] In order to demonstrate fulfillment of this program criteria, a developer must obtain the necessary construction and operating air district approvals, along with completion of emissions compliance testing.

32 Ozone precursor emissions of hydrocarbons (HC) are considered VOC emissions. It should be noted that air districts may characterize these emissions as non-methane and/or non-methane and non-ethane emissions.

Each of the AQMDs has a unique set of air quality rules and regulations, as well as a prescriptive permit processing procedure. Although the rules and regulations are codified differently and may have unique content compared to other districts, the general framework for each district's permit approval program consists of comparable basics.

Air emissions regulations can be a constraint on SGIP projects because of the following issues:

- Required NOx emission;
- AQMD timelines (that can be 6 months or more) to issue permits are not consistent with the SGIP process and timelines; and
- Clarification of air permit application timelines and completeness.

Interviews with PAs uncovered an understanding of air emission permitting problems, as well as some limited activities that PAs have undertaken to attempt to assist developers, host customers, and other SGIP stakeholders with running the emissions regulatory gauntlet. The activities PAs have undertaken include:

- Organizing meetings for developers to learn more about meeting air emission regulatory framework. SDREO has held workshops that involved the local air district. PG&E has included air permitting information in some of its past outreach efforts.
- Collateral material such as fact sheets have been distributed regarding the change in air emission requirement. For example, SCE's flyer that describes the SGIP program explicitly states that an applicant needs to apply and receive air permitting documentation in order to receive the incentive payment. This information is good to highlight the requirement to potential applicants. A separate SCE flyer specifically mentions that fossil fuel combustion projects must comply with AB 1685 air emission standards.
- Web site that includes limited information regarding air emission requirements, however, with little to no specifics regarding air agency contacts.

Based on a cursory review of each PA's web site, there is no information specific to the permit application process and what can be expected with respect to air district timelines and milestones. In fact, for those PA territories where there are multiple air districts, information is not readily available that would allow a potential developer to even identify the applicable air district.

4.2 Building construction regulations

Building construction regulations (BCR) is a generic term used to describe the ad-hoc system of creating and enforcing the codes dictating what is allowed, or not allowed, in the building environment. For SGIP project developers, host customers, and other stakeholders, BCR can often affect project timelines and economics, which frequently determine whether a project is successfully deployed. Numerous comments were made from SGIP project stakeholders about the struggle to get through the building construction process.

Building design and construction are typically addressed at the state and local level, rather than at the federal level, with the exception of federal buildings and facilities. Code development and enforcement is a patchwork of state and local regulations. Where not preempted by state-level authority, local governments usually adopt their own building construction regulations. Because

power generation has typically been regulated in the United States from within the utility industry, there are few provisions in existing standards, codes, and building construction regulations that address either traditional or emerging distributed generation technologies. This limitation is compounded by a lack of familiarization on the part of the local code enforcement official.[33] Unfortunately, this uncertainty can create significant additional costs for a developer through arduous site-specific testing, evaluations, and approvals in order to obtain the blessing of the code enforcement officer.

Local jurisdictions enforce the California Code of Regulations (CCR, Title 24)[34], also known as the California Building Standards Code. But because of local amendments, codes may differ among jurisdictions. The California Building Standards Code requires emergency or stand-by power in specific classes of residential, commercial, industrial, and institutional buildings and applies to all buildings and structures in the state. The following parts of the Code are relevant to self generation installations[35]:

- California Building Code (general building design and construction requirements, including fire- and life-safety and field inspection provisions)
- California Electrical Code (technical requirements for all electrical power supplies)
- California Mechanical Code (mechanical standards for the design, construction, installation, and maintenance of heating, ventilating, cooling and refrigeration systems, incinerators, and other heat-producing appliances)
- California Plumbing Code (requirements for natural gas pipeline additions)
- California Fire Code (requirements for on-site fuel storage)

In contrast to privately owned facilities, public entity projects need to obtain approvals from a variety of separate state organizations. For example, hospitals need to go through the Office of Statewide Health & Planning Development (OSHPOD). School projects, particularly those included in the new construction or modernization of schools in California, may need assistance and oversight from as many as 30 entities.[36] The agency that most directly affects SGIP developers is the Division of State Architects (DSA), which is overseen by the State's Department of General Services (DGS).

Building construction regulations can be a constraint on SGIP projects because of the following issues:

- SGIP projects may consist of relatively new technologies;
- BCR officials' timelines to issue permits are not consistent with the SGIP process and timelines; and
- Ad-hoc nature of BCR system overall.

33 Energy and Environmental Analysis Database: http://www.eea-inc.com/rrdb/DGRegProject/Firecode.html

34 Information on the California Building Standards Code can be found at: http://www.bsc.ca.gov/title_24.html

35 California Energy Commission's Distributed Energy Resource Guide: http://www.energy.ca.gov/distgen/permitting/building_permits.html

36 California's Coalition for Adequate School Housing: http://www.cashnet.org/resource-center/Section1/1-1-1.html

It was clear from interviews with PAs that they generally seem to recognize BCR permitting can be a significant issue. A review of each PA's Web site seemly supports the notion that because it is an issue largely out of their control, there is not much support the PAs can provide. That is, there is a general lack of information specific to the BCR permitting processes, and what can be expected with respect to local permitting timelines and milestones. Even for public projects, there appear to be no links to even the DSA's site.

However, our discussion with PAs did uncover some limited activities that PAs have undertaken to attempt to assist developers, host customers, and other SGIP stakeholders with maneuvering the BCR permitting process. The activities PAs have initiated include:

- Including information in flyers
- Staying on top of permitting requirements
- Providing deadline extensions
- Bringing stakeholders together

4.3 Interconnection and tariff issues

The third external set of issues that can play a role in determining SGIP project success are electric utility interconnection policies and procedures and utility tariffs. Electric utilities, both regulated, investor-owned utilities and publicly-owned municipal utilities and irrigation districts, establish (sometimes with regulatory approval) and execute policies that allow the integration of on-site generation to the electric grid. Via tariffs, they also create the economic playing field on which potential SGIP projects are evaluated to during project planning.

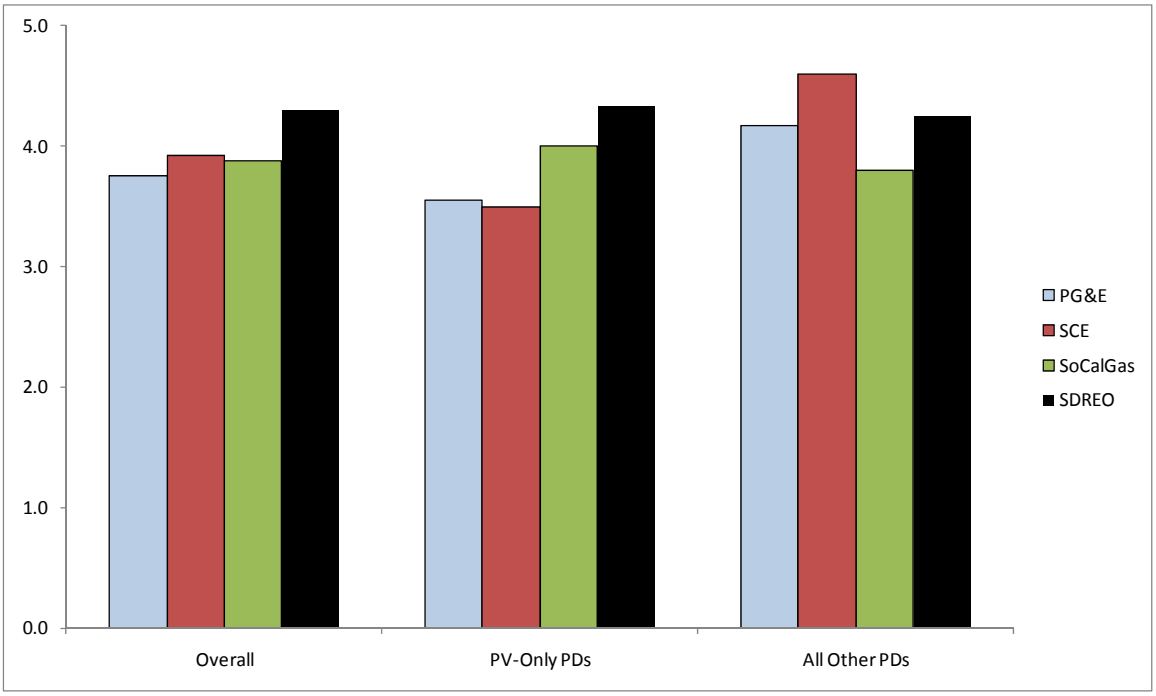
The activities of utilities on these interconnection and tariff issues are outside the realm of SGIP PAs, even when the PA and utility are from the same company, as occurs at two of the SGIP PAs. The utility SGIP PAs (PG&E and SCE) are in separate departments from the interconnection and tariff departments, and thus interconnection issues are outside the direct control of the program, but not the broader PA organization. For SCG and SDREO, all interconnection and tariff issues are outside of their direct control. Still, PAs can play an expanded role in educating potential host customers and project developers on the impact these areas can have on projects.

PAs are clearly limited on the impact they can have on utility interconnection and tariff policies, but one area they can work in is providing potential SGIP applicants and project developers with more and better information on what potential challenges and pitfalls lay ahead. The PAs already are providing some information, though have the potential to do more.

PAs are allowed to approve SGIP incentive payments only for projects that have been approved by the local electric utility for grid interconnection. Thus, PAs ensure that SGIP applicants pursue such approval. But PAs have taken additional steps to actually assist SGIP projects with the interconnection approval process.

Project developers were asked about the helpfulness of PAs on interconnection. The results illustrate that all PAs are rated as mostly helpful (about a 4 on a scale of "1" to "5") (see Figure 4-1).

Figure 4-1. Mean Project Developer Ratings for Project Administrators' Interconnection Helpfulness



Unlike interconnection, which is a requirement for SGIP projects, it is even more difficult for the PAs to affect tariff issues. The PAs recognize that understanding existing tariffs and their impact on the economics of a SGIP is central to their role as PAs. However, their role is again limited in terms of the impact they can have on tariffs beyond educating developers, potential host customers, and other stakeholders. Thus, most of the PA activity around tariffs appears to be one of education on tariffs and their impact on project economics.

More information about the different PAs interaction with the interconnection and tariff department is included in Appendix E.

4.4 Demographics

California is made of up several regional economic areas. These regions possess unique economic characteristics and specialty market sectors, or areas where a greater number of jobs or economic productivity is concentrated, relative to the state average. A working group of economists and other stakeholders have created a series of regional economic summaries designed to help planners and agencies understand how choices and policies at the state level may have different economic impacts depending on the region's concentration of specific business sectors. This research may prove valuable to the SGIP.

Understanding regional economic strengths serves as a contextual factor for each PAs success. Thus, instead of attributing SDREO's success with public entities to the large number of public entities argued to be part of their territory, SDREO's success should likely be attributed to a success with public entities.

Another way to approach the issue of economic activity in the PA territories is to consider business demographics by analyzing how fast sectors are growing or declining. Generally over the last several years, the state has been losing economic base in manufacturing; however what is notable is that PG&E has been losing manufacturing establishments at much greater rate than the other PAs.

Table 4-1 shows the program penetration rates as a function of non-residential accounts by PA. PG&E shows the highest number of application per one thousand non-residential accounts, where SDREO shows the highest number of completed projects per one thousand non-residential accounts.

Table 4-1. Program Penetration Rates

	PG&E	SCE	SCG	SDREO
Number of applications through December 2006*	1737	867	540	346
Completed projects through December 2006	439	243	146	120
NRA 2002**	588,052	550,456	207,820	133,022
Number of applications per 1,000 NRA	2.95	1.58	2.60	2.60
Number of completions per 1,000 NRA	0.75	0.44	0.70	0.90

NRA = nonresidential accounts
** Note that applications rate may not be a useful metric in that many phantom applications occurred 2001 through 2005*
***All account numbers based on CEC reports for 2002. SCG accounts 2001 data*

5. IMPLICATIONS OF DIFFERENT APPROACHES

Below is a summary of how developers compare and rate the PAs. It is evident in the narrow fluctuations of scores that the relative effectiveness of the PAs is a discussion of nuance, not of extremes. This discussion frames the results of the Summit Blue team's regression analysis and final review of each PAs unique strengths and challenges.

5.1 Developer Ratings

Over 26 developers representing 25 firms and all PA territories were interviewed. Because the developer is the primary channel through which this program is promoted, their views on the program and the PAs ratings are an important indicator of the PAs effectiveness. In fact only 18% of projects over the life of the SGIP have been completed without a developer. The numbers below (Table 5-1) show a remarkable similarity, consistent with a statewide program.

Table 5-1. Project Developer Survey Response

Metric (Where 1 is Defined as "Poor" and 5 is defined as "Excellent")	PG&E		SCE		SGC		SDREO	
	Responding	Average Rating	Responding	Average Rating	Responding	Average Rating	Responding	Average Rating
Ease of working with	20	4.4	16	4.2	10	4.2	13	4.2
Timeliness	18	4.2	15	4.1	10	4.4	11	4.0
Responsiveness to information requests	17	4.2	15	4.2	10	4.2	11	4.0
Asst with interconnection coordination	17	3.6	13	3.9	8	3.9	10	4.3
Assist with application materials	17	4.3	13	4.5	10	4.4	11	4.3
Asst with marketing	14	3.5	10	3.7	8	3.8	9	3.8
Other	2	4.5	2	4.5	2	4.5	1	5.0
Average Rating of Metrics		4.1		4.1		4.2		4.2

Other was an open question, where if a respondent had a unique experience to report, they were offered the chance to add this to the ranking.

In general, the majority of developers say that they have had no major issues with respect to PA responsiveness during the application process, and the numbers they use in ranking the PAs on various job functions reflect this. Some developers do have preferences and comments about the different "style" of how PAs approach the work, but on balance, these comments appear to reflect personal preferences as opposed to any discernable trend. Project developers prefer PAs that are easy to reach and consistent in interpreting rules. However many also reported appreciating flexibility shown by PAs. No preference was shown for either a utility or non-utility administrator overall.

5.2 Results of Regression Analysis

Project Cost Determinates

This section of the analysis uses statistical regression analysis to understand whether there are any significant differences in the time required to complete a project. This analysis is conducted across technologies and PAs. In this model, the dependent variable is the time to complete the project in days. The independent variables include:

- A constant term.
- A 1-0 indictor variable for all photovoltaic (PV) projects. This variable was included to show the time to completion of PVs compared to all other technologies.
- Indicators for PG&E, SDREO, and SCG, which indicate the average time of completion of the projects associated with these PAs.
- The PA terms above for PV projects to determine if there are any differences across PAs for PV projects.

The model was estimated over completed projects from 2001 to 2006. The estimated model is presented in Table 5-2.

Table 5-2. Determinates of Days to Completion SGIP completed projects, 2001 - 2006

Independent Variable	Coefficient	T-Value
Constant	623.25	33.62
Photovoltaic System (1-0 indicator)	-127.67	-5.80
PA is SCG	35.90	1.18
PA is SDREO	85.66	2.14
PA is SCE	-59.08	-1.90
PV system and PA is SCG	-70.98	-1.70
PV system and PA is SDREO	-54.56	-1.15
PV system and PA is SCE	-5.35	-0.14
Sample Size	942	
R-Squared	13%	

These results show that:

- PV systems overall take 133 days less to complete than the other SGIP technologies. This result is statistically significant.

- Projects under SCE take, on average, the least amount of time to achieve completion, which appears to be a key variable in why SCE project application completion rates are highest on average (see also Figure 3-5). Projects under SDREO take longer. The SDREO's project base contains the highest percentage of public entities, which take longer to build and navigate the SGIP, so this result is not surprising. This result does also include data from project inception, before SDREO and SDG&E undertook to reduce duplication in project efforts.

Additional analyses were conducted on self reports by customers of expected dollar per Watt installation costs *at the time of application.* However, the analysis, though promising was too dependent on projected completion data for projects in program years 2005 and 2006. Ultimately, the variance in this estimate was judged to introduce too much error to be reliable. As a consequence, the Summit Blue team endeavored to regress the expected dollar per Watt installation costs for solar installation only. Again after in-depth review, the results - though promising and showing a potentially significant variation across customers' estimates of PV installation costs by PA - were not readily verifiable due to a number of confounding factors. Preliminary results indicate that although installed PV costs have been declining generally, some significant variation may exist between the PAs on the costs customers report for PV systems. The results are potentially intriguing and may merit additional review.

5.2.1 PG&E

Strengths

PG&E is the most consistently oversubscribed PA. This appears to be due to:

- substantial internal support,
- dedicated staffing for SGIP marketing, and
- coordinated outreach efforts.

However external variations, such as pro-sustainability or pro-solar sentiment in the territory should not be ruled out as a contributing factor. As mentioned above, PG&E is the only PA with a reduction in $/W by increasing non-incentive expenditures. The reason for this is not yet clear, and additional research may help explain the phenomenon.

Challenges

PG&E is something of a victim to their success in that developers and applicants are frustrated by multiple points of contact and the differences in how PG&E's interconnection group works across the territory. PG&E is also challenged by the extensive and diverse territory it must cover. Also PG&E retains fewer projects through the SGIP stage gates than SCE, but this number is improving.

Specific Characteristics. Figure 5-1, Figure 5-2, and Figure 5-3 show the number of PG&E projects by Program Year (PY) that have progressed through four SGIP stage gates: reservation request, conditional reservation letter, confirmed reservation letter and incentive payment. PG&E's SGIP projects are more than double any other PA's on a total installed capacity basis (Figure 5-4). Note that the drop off in completion in PY 2005 and 2006 is due to the lack of elapsed time as these data include all completions through December 2006.

Figure 5-1. PG&E SGIP Project Stages and Counts

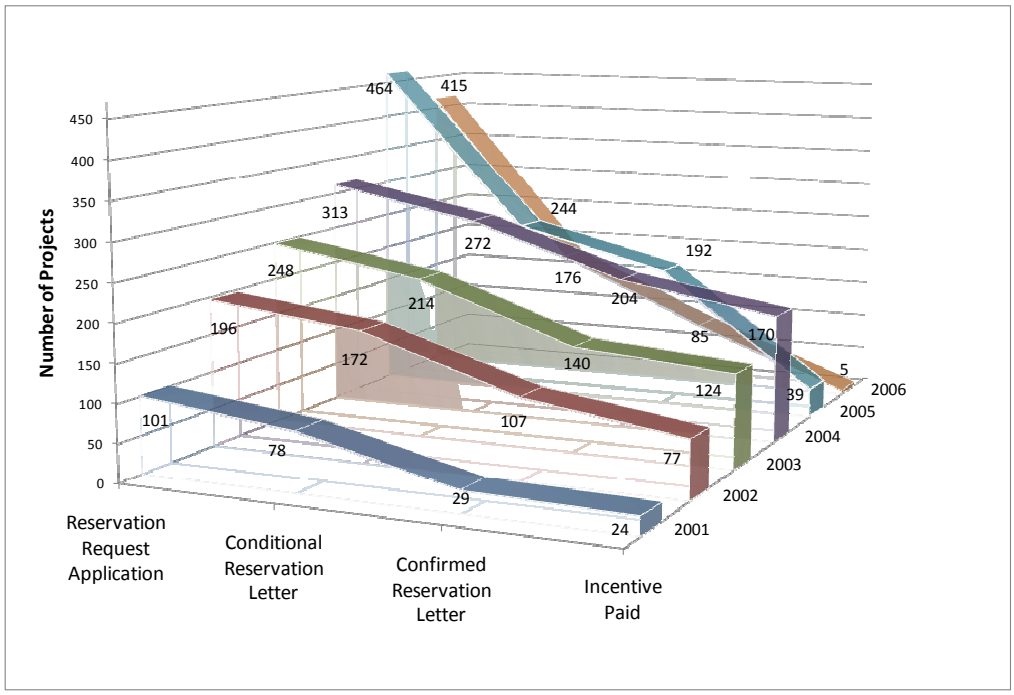


Figure 5-2. PG&E SGIP Solar

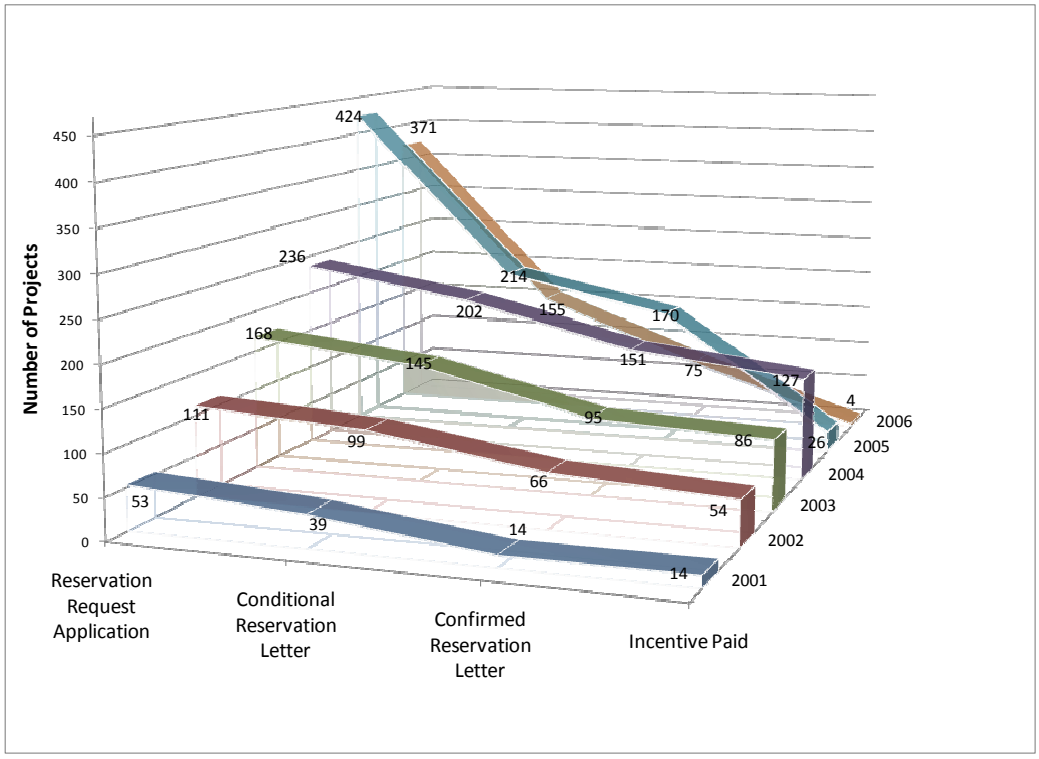
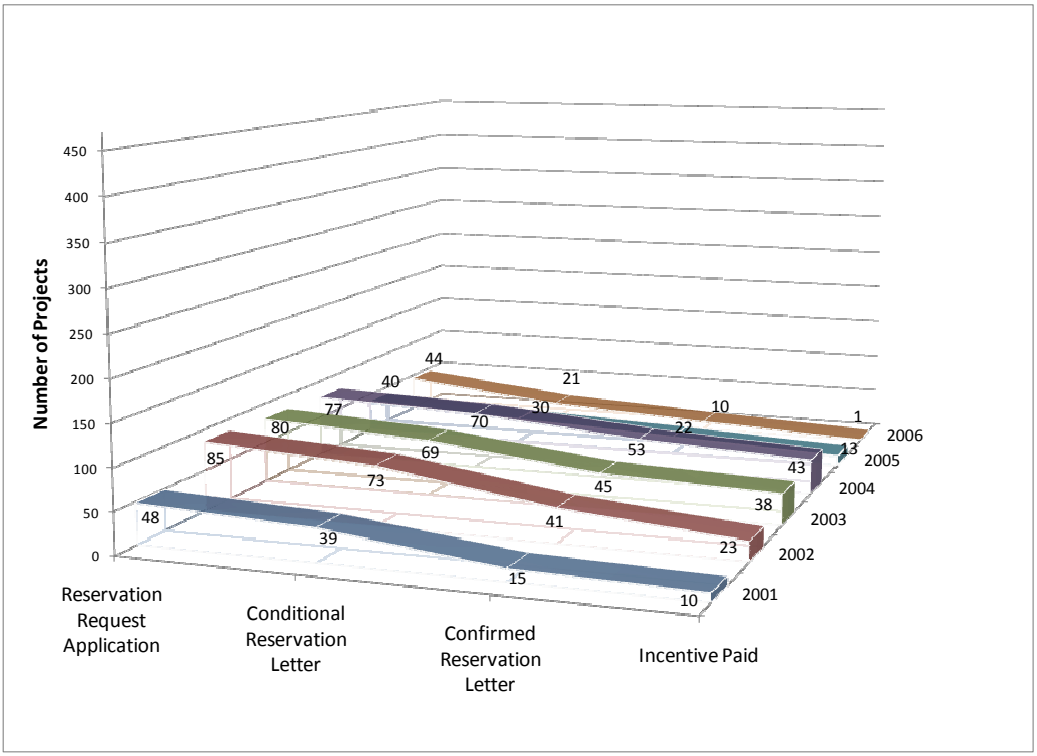
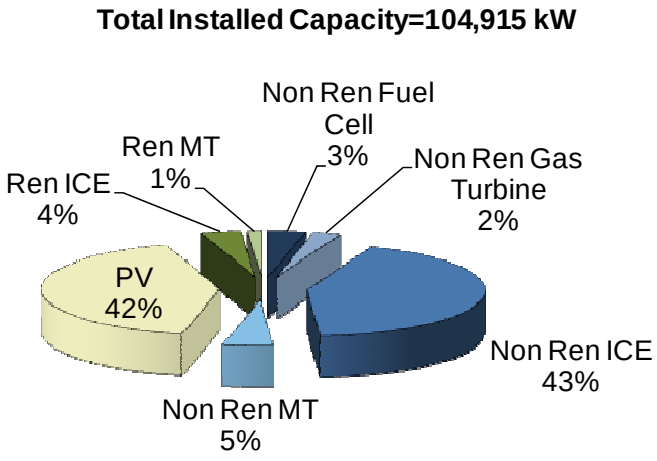


Figure 5-3. PG&E SGIP Non Solar



A summary of the total installed capacity is presented below in Figure 5-4.

Figure 5-4. PG&E Distribution of Installed System Capacity (kW)



5.2.2 SCE

Strengths

SCE has the fastest project completion time as well as the highest rate of project completion throughout the SGIP stage gates. Project developers characterize this PA as tough but fair, and appreciate the help they have received with interconnection. The PA has approached the SGIP with single point of contact approach, which supports consistency in interpretation and depth in knowledge base.

Challenges

The lack of substantial marketing efforts may contribute to the program's under subscription in recent years, though declining solar rebates are also cited by host customers as a concern. The relatively lean staffing contributes to the creation of an information silo which carries some risk and may not support ready transition to CSI.

Specific Characteristics

Figure 5-5, Figure 5-6, and Figure 5-7 show the number of SCE projects by PY that have progressed through four SGIP stage gates: reservation request, conditional reservation letter, confirmed reservation letter and incentive payment. Note that the drop off in completion in PY 2005 and 2006 is due to the lack of elapsed time as these data include all completions through December 2006. On a percentage basis, SCE has a similar composition of installed capacity to PG&E (Figure 5-8).

Figure 5-5. SCE SGIP Project Stages and Counts

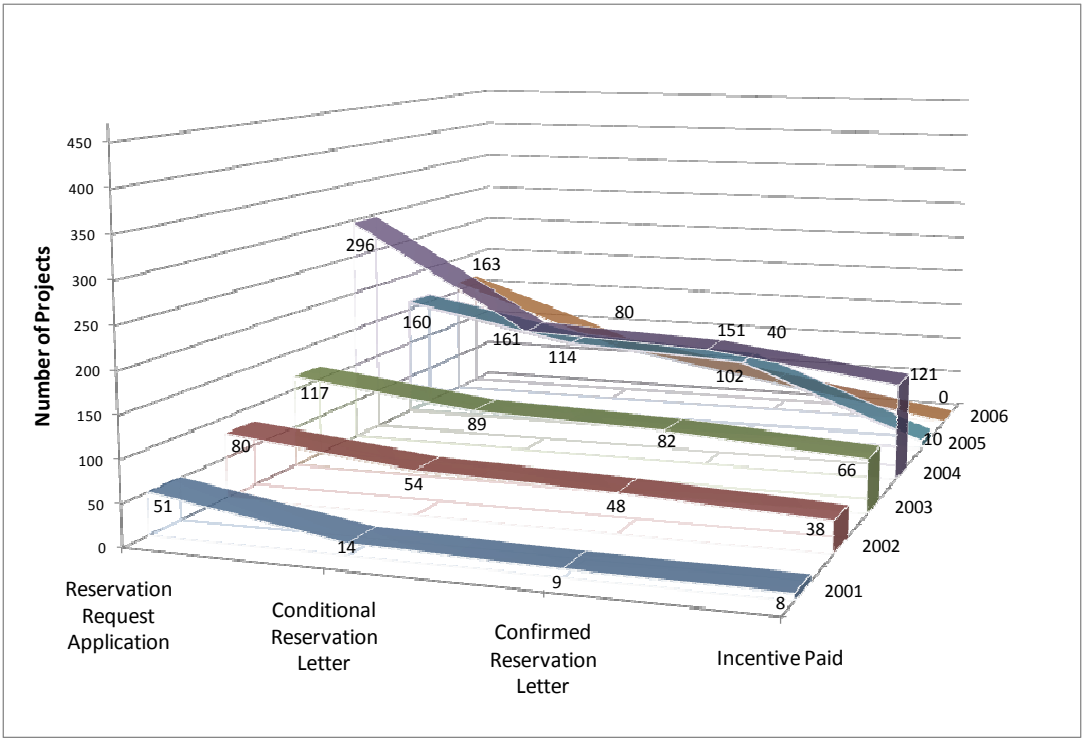


Figure 5-6. SCE SGIP Solar

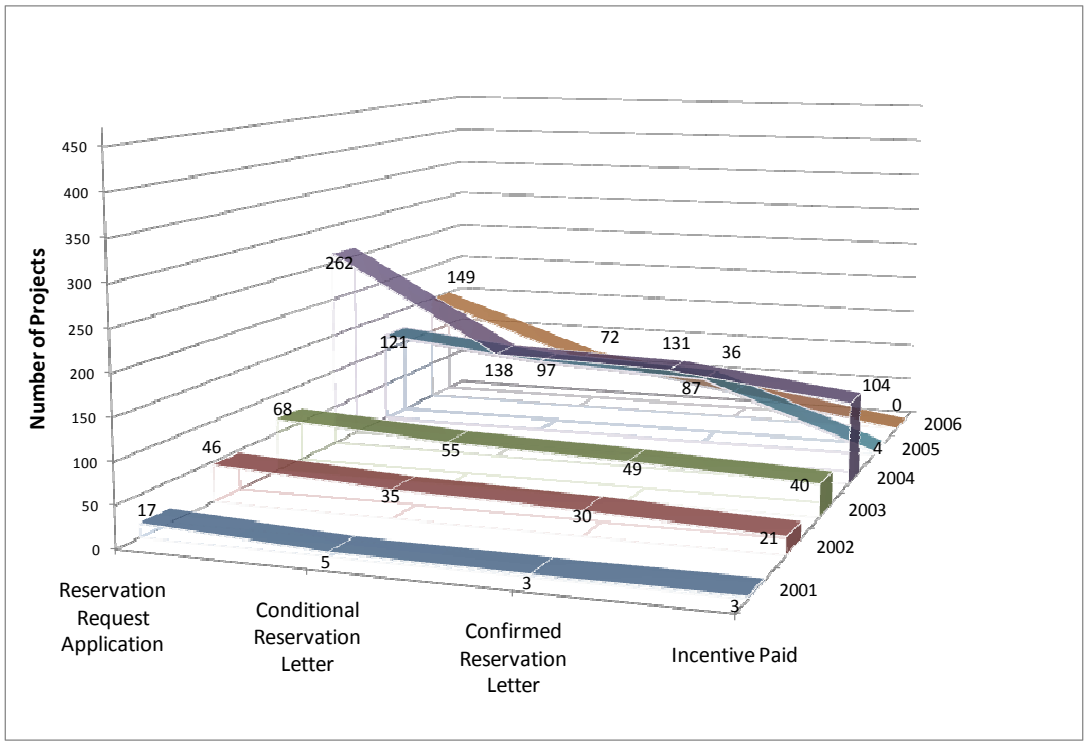


Figure 5-7. SCE SGIP Non Solar

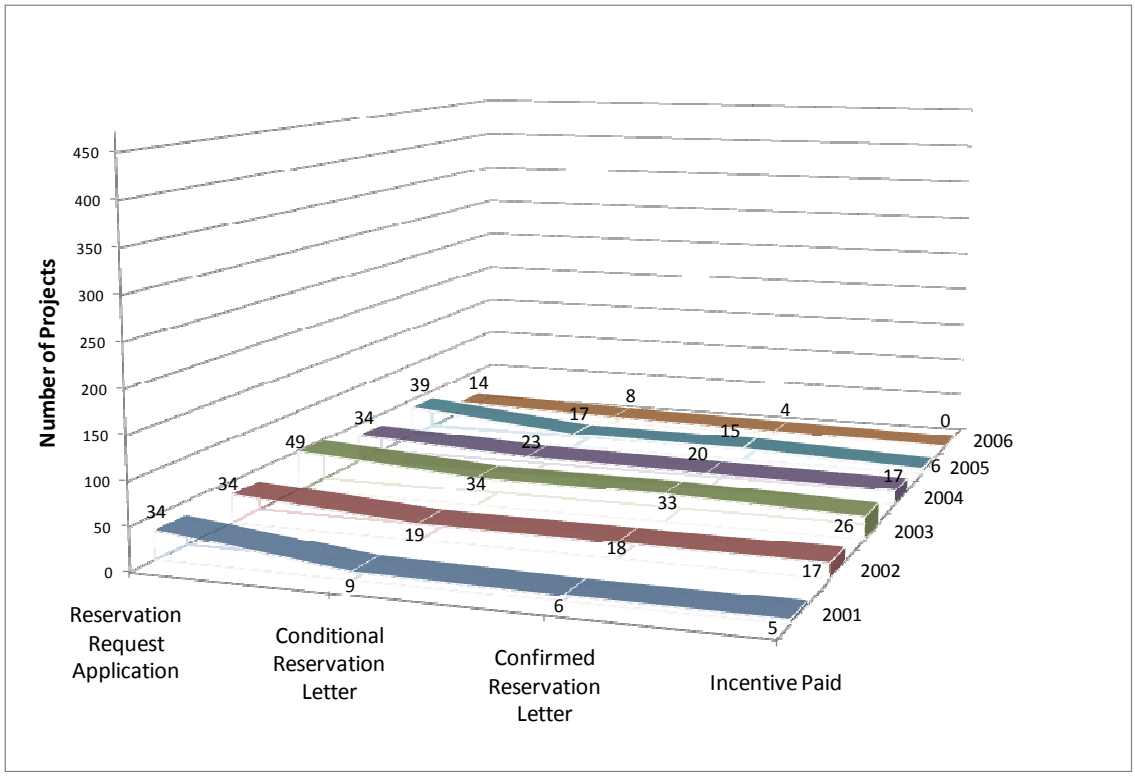
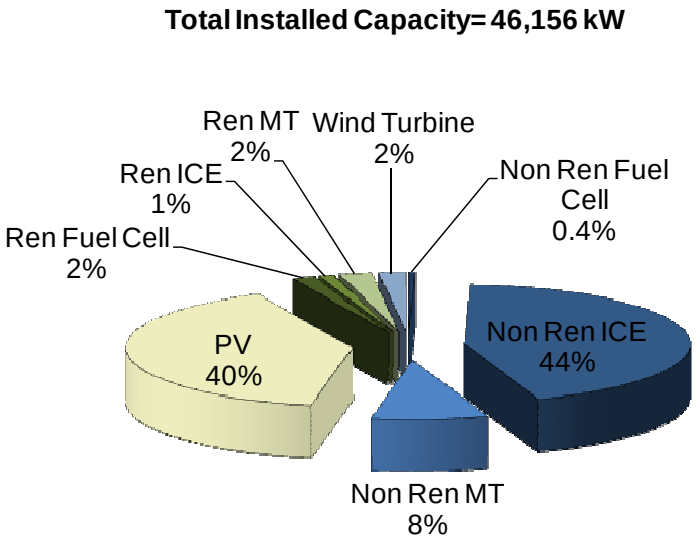


Figure 5-8. SCE Distribution of Installed System Capacity (kW)



5.2.3 SCG

Strengths

SCG was the only PA to receive funding discretion from their internal organization to offer an incentive to account representatives that brought in (and retained) SGIP applicants. This is one example of how the SGIP is seen as consistent with the gas company's mission. SCG has a significantly greater portion of cogeneration projects in its project suite than any other PA (Figure 5-12).

Challenges

Because of the relatively strong affinity for cogeneration, SCG suffered when the price of gas reduced the economic viability of cogeneration. This PA is also faced with uncertainty in the SGIP. With funding for Level 3 (nonrenewable cogeneration) out after January 1, 2008 and PV to be administered by the other PAs, SCG has significant SGIP expertise and declining project flow. Moreover the increasingly stringent NOx emissions will also place significant economic disincentives nonrenewable cogeneration this year.

Specific Characteristics

Figure 5-9, Figure 5-10, Figure 5-11 show the number of SCG projects by PY that have progressed through four SGIP stage gates: reservation request, conditional reservation letter, confirmed reservation letter and incentive payment. Note that the drop off in completion in PY 2005 and 2006 is due in part to the lack of elapsed time as these data include all completions through December 2006.

Figure 5-9. SCE SGIP Project Stages and Counts

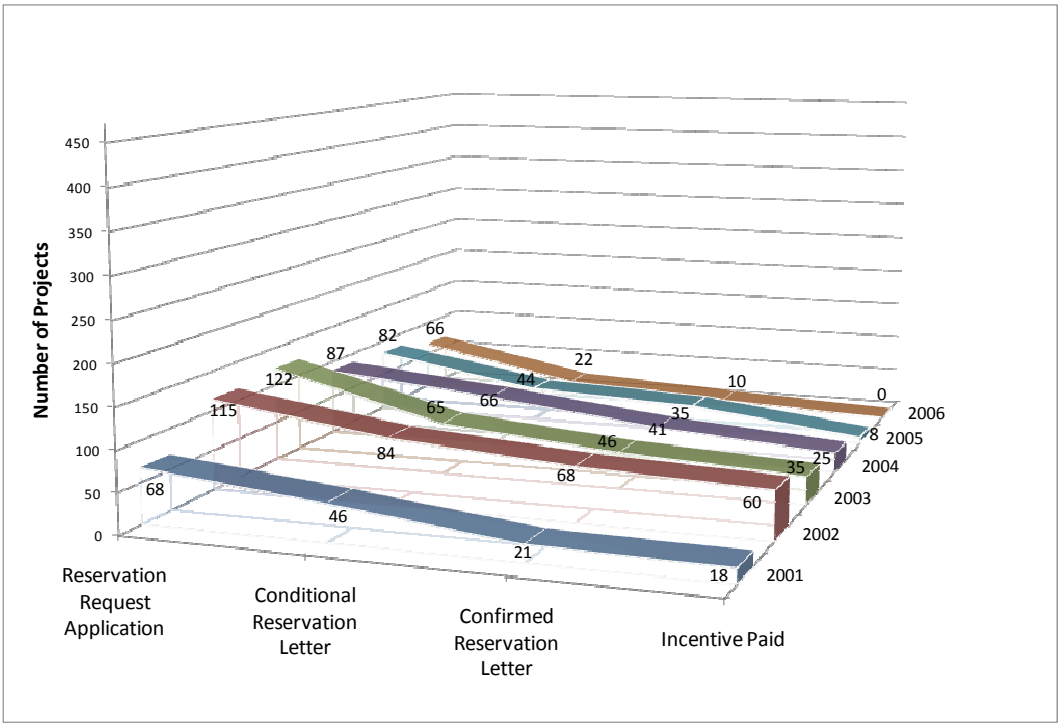


Figure 5-10. SCG SGIP Solar

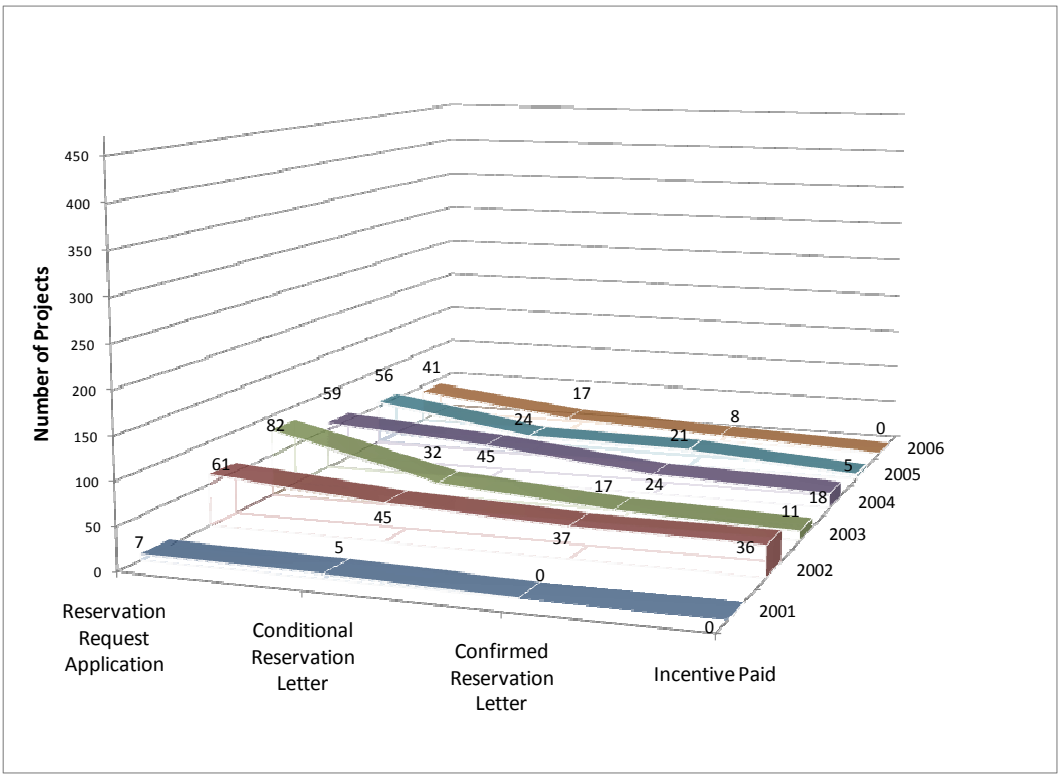


Figure 5-11. SCG SGIP Non Solar

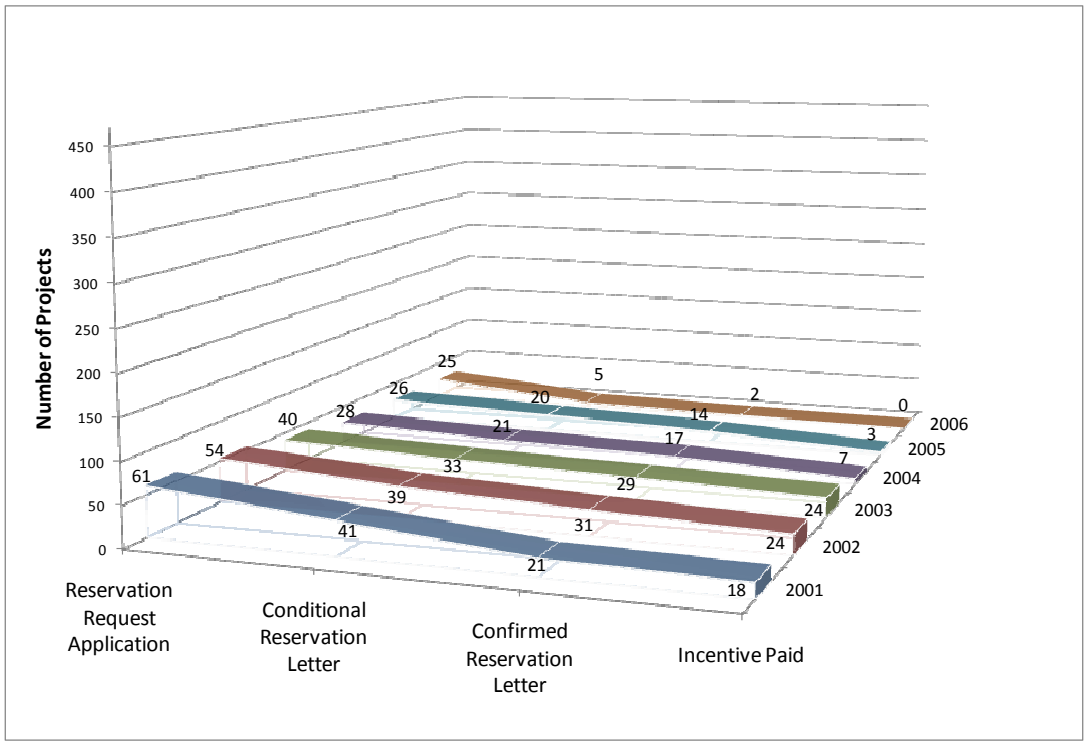
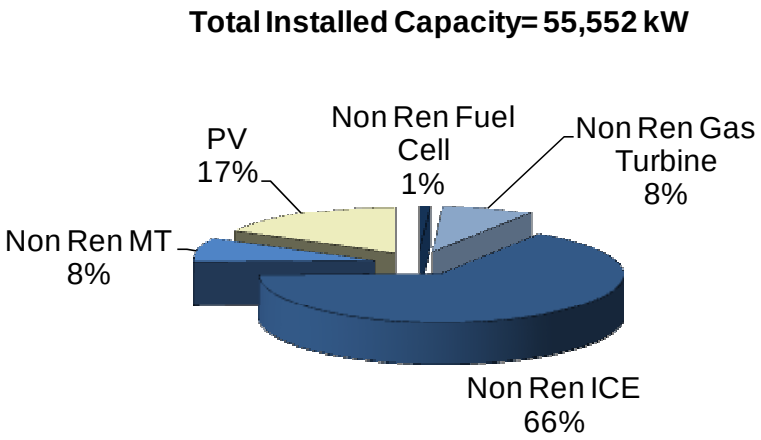


Figure 5-12. SCG Distribution of Installed System Capacity (kW)



5.2.4 SDREO

Strengths

SDREO is the only PA to promote SGIP case studies and to report actively "right sizing" counseling of prospective applicants. The SDREO also reports proactively suggesting SGIP projects, entities in their area. As a not for profit, they work well with other public entities and have the highest public entity participation rate of the PAs. This PA has improved their processes such that the $/W is not statistically different than for other PAs. SDREO's program Web site is the most comprehensive of all the PAs, and has relatively transparent linkages with the SDG&E Web site.

Challenges

The SDREO has an additional coordination role in working with SDG&E. The working relationship between the two entities has improved substantially over time, however it may be that despite best efforts to reduce process redundancy, projects in SDREO's territory may take longer. There has been some fall off in the completion rate of projects through stage gates in recent years that – based on focus group participants - may be the result of solar unfriendly tariffs. The PA is also relatively small, and given the relatively large incentives for fuel cell projects may exhaust Level 2 funding quickly in the coming year.

Specific Characteristics

Figure 5-13, Figure 5-14, Figure 5-15 show the number of SDREO projects by PY that have progressed through four SGIP stage gates: reservation request, conditional reservation letter, confirmed reservation letter and incentive payment. Note that the drop off in completion in PY 2005 and 2006 is due in part to the lack of elapsed time as these graphs include project completion through December 2006, but may also be due to the declining interest in solar under the SGIP. SDREO's composition of installed capacity is shown in Figure 5-16.

Figure 5-13. SDREO SGIP Project Stages and Counts

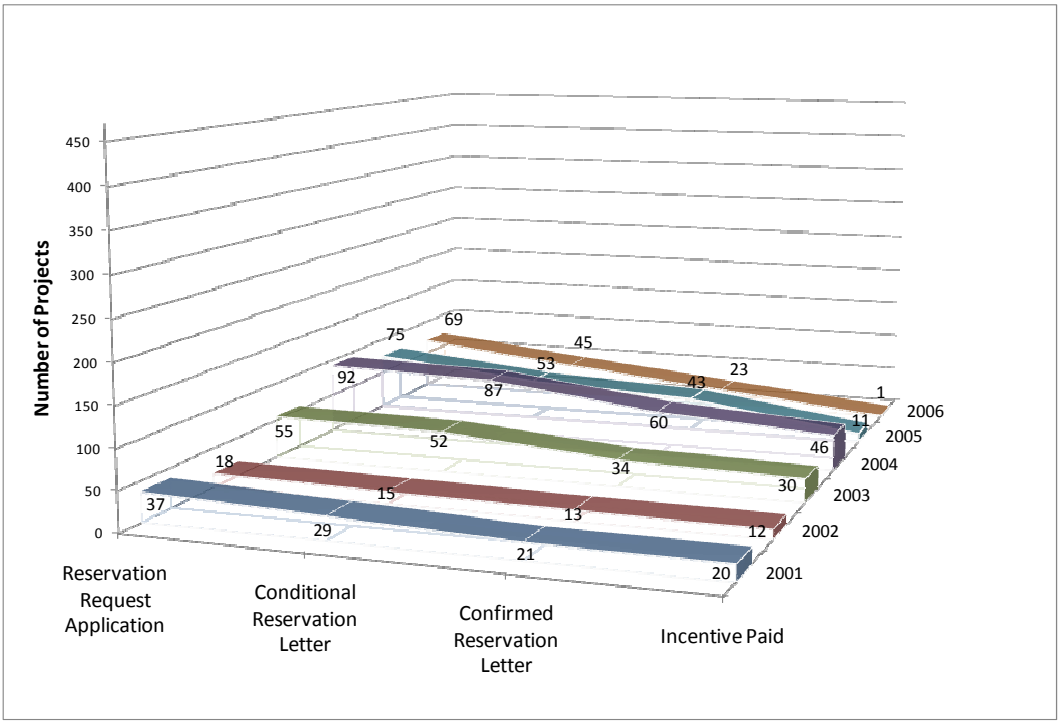


Figure 5-14. SDREO SGIP Solar

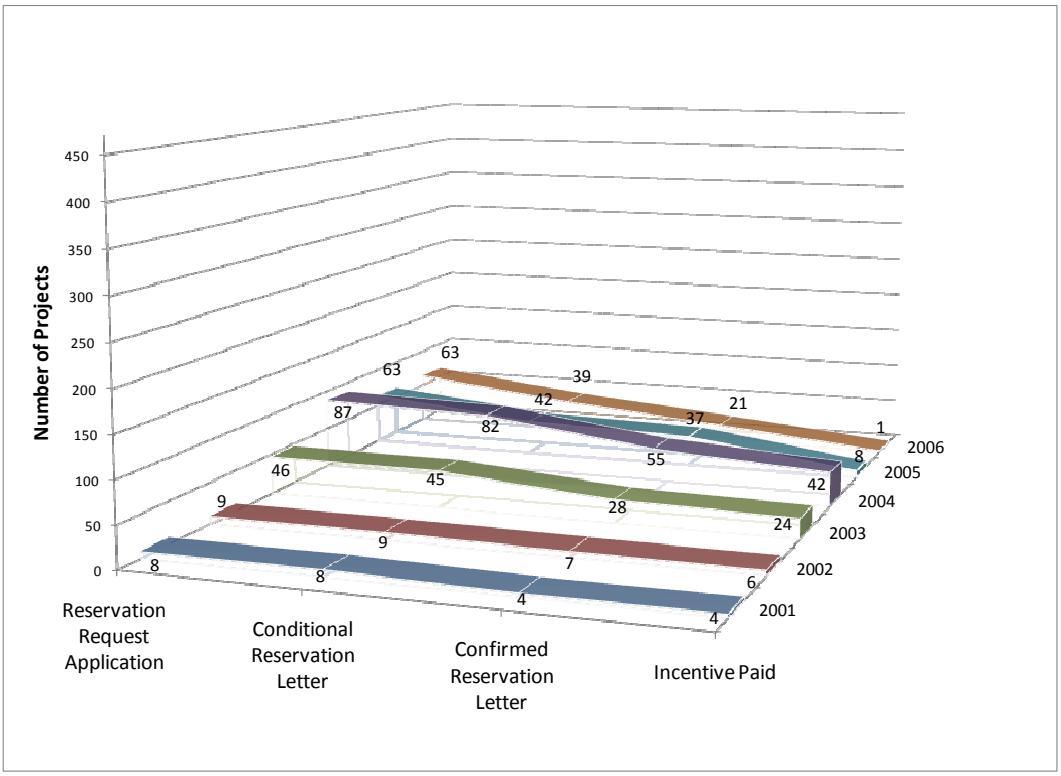


Figure 5-15. SDREO SGIP Non Solar

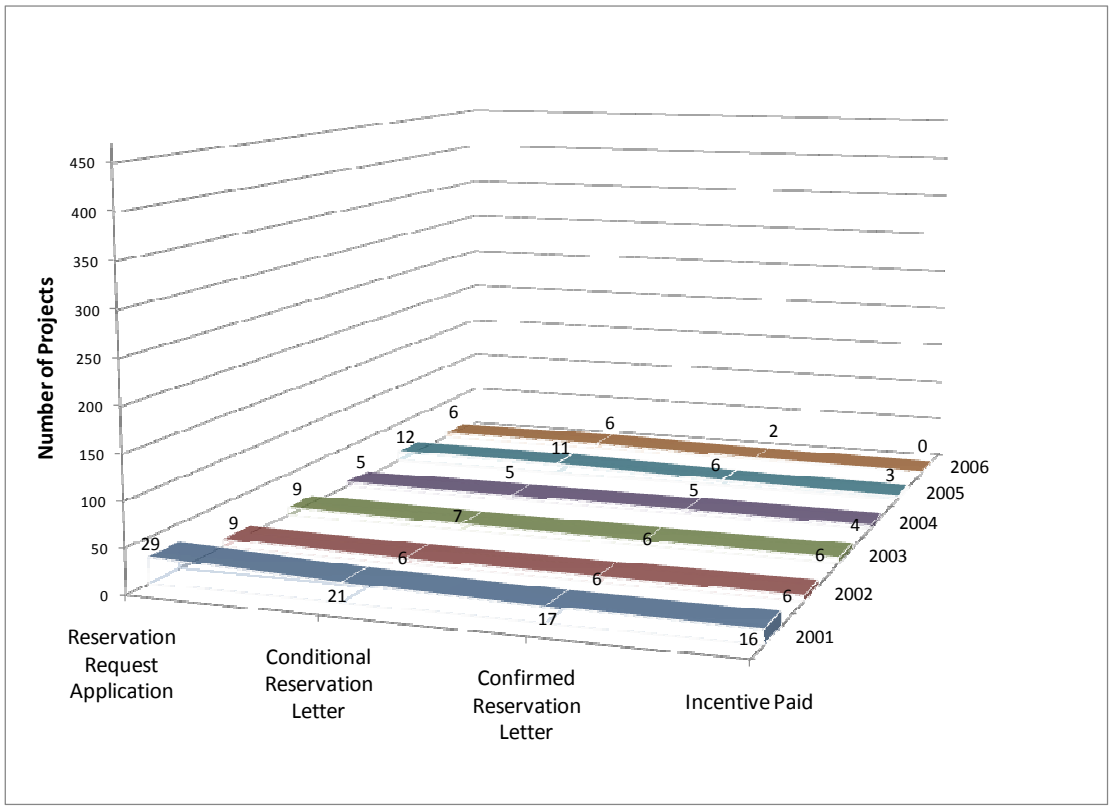
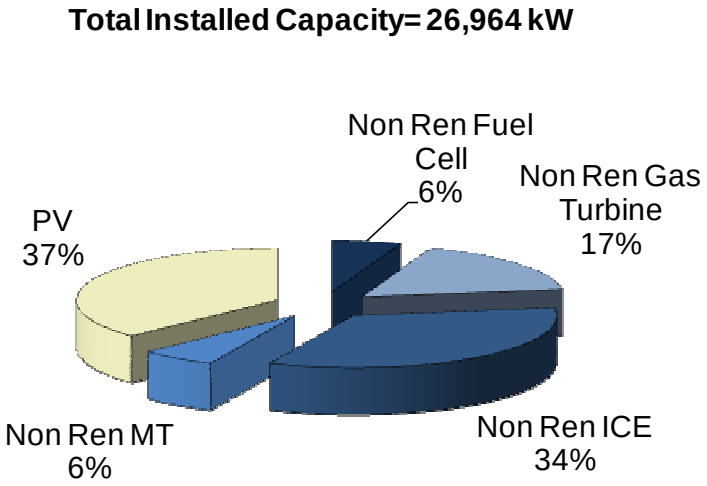


Figure 5-16. SDREO Distribution of Installed System Capacity (kW)



5.3 Differences from the Previous PA Comparative Assessment

The previous PA comparison[37] was limited by the amount of data available for evaluation by what was then a fairly young program with project completion times that were typically over one year in length. As a result a number of the data tables and results are based on "active projects" rather than "completed projects". Also, the tracking of administrative costs was largely viewed as coincident with application years, again, due to limitations in the data available. Thus a number of comparisons that might directly be made to the prior evaluation are somewhat difficult. To help address this concern, throughout this evaluation, data are included from previous years with regard to application rates, stage gate progression, costs etc.[38]

However, the previous evaluation did identify several key results across two main topic areas: organizational structure and comparison of effectiveness. The discussion and table below address each of these key findings, and shows how the results of this evaluation differ.

[37] Itron, Self Generation Incentive Program Administrator Comparative Assessment, September 2, 2004.

[38] The prior evaluation did not identify specific utility administrators, but rather called the utility PAs by number. Based on the PAs response to the data request, the prior report's results are interpreted to be: Utility #1 is PG&E; Utility #2 is SCE; Utility #3 is SCG; The non utility administrator is SDREO.

Table 5-3. Comparison to Prior Results

Criteria	2003 Result	2007 Result
Organizational structure:		
Size and makeup of organization	Large organization has access to more resources and ability to utilize economies of scale.	Internal organizational support may be more important than shear size and economies of scale available to each PA. Even large utility PAs may not receive strong internal support.
Organizational goals aligned with program	SDREO overall goals are more focused and aligned with the program goals.	PG&E has increasingly included SGIP with SGIP in its integrated DSM planning.
Fiscal responsibility	Not comparable; utilities must provide fiscal oversight under the prescribed program design.	Utility and non-utility fiduciary responsibilities are different, however all PAs show clear concern to properly manage program resources.
Administrative & technical expertise	Both approaches provide necessary expertise.	Same.
M & V Support	Both approaches provide good support.	Same.
Marketing Support	Both approaches provide needed support.	Marketing approaches vary by PA. PG&E and SDREO have strong functions.
Other organizational characteristics	Both approaches have strengths in some areas.	Same.
Administrative effectiveness:		
Penetration rates	Slightly higher for utility average when considering all applications; slightly higher for non-utility when considering just active & complete applications.	Applications to the SGIP were not deemed the best measure. Completed applications show highest penetration at SDREO.
Admin cost as percent of budget	Non-utility result is roughly one-third higher than utility average to date; However, during the first year (PY2001), one utility result was more than twice the non-utility result.	Utility and non-utility approaches are financially comparable based on regression analysis that factors out project type.

Criteria	2003 Result	2007 Result
Admin cost per application	Non-utility result is roughly 80% higher than utility average to date; However, during first year, non-utility result was less than two of the three utility results.	The administrative cost per application is not an accurate metric because the PAs track administration on a calendar year basis and incentives on a Project Year basis. Moreover for PAs with oversubscription and high drop out rates in 2004 the cost per application will seem artificially low as compared to other PAs.
Admin cost per kW rated capacity	Non-utility result is roughly twice the utility average to date; However, during the first year, non-utility result was less than each utility result.	These values are higher than the previous report because they contain only completed projects, where the previous report included active and completed projects.
Project completion time	Project completion times were 40% longer for IC engines with the non-utility approach to date; however, the result is affected by many factors not under the administrator's control.	The time to complete a PV project is significantly shorter. SCE has the fastest project completion times.
Emphasis on clean power	Utilities produced a higher percentage of completed projects with clean technologies compared to the non-utility. Utilities produced a higher percentage of kW on-line for both active and completed projects of clean technologies compared to the non-utility.	PG&E, SCE and SDREO produced a higher percentage of completed projects with clean technologies than SCG. PG&E and SCE produced a higher percentage of clean technology capacity (kW) compared to SDREO, while SDREO produced a higher percentage than SCG.
Admin cost per kW of peak demand impact	Non-utility result is roughly 20% lower than the average utility result; however, two utilities' results were lower than the non-utility result. Peak demand results represent primarily first-year projects with admin costs through mid-2002.	These values are lower than the previous report because they include all the installed capacity for the completed projects, though some projects may no longer be online.
Market outreach through workshops	Non-utility result indicated a higher proportion of potential host customers were reached with workshops.	PG&E and SDREO report conducting relatively more workshops and outreach.
Marketing expenditures	Non-utility approach is 86% higher per application than utility average to date.	The percentage of marketing cost per application was not deemed a reliable cost metric.
Growth in number of applications	Inconclusive.	PG&E has the greatest number of applications, however substantial external variations exist that affect PA application rates, such as tariff and other geographic issues.

Criteria	2003 Result	2007 Result
Customer awareness	Both approaches performed similarly.	Customer awareness was not measured directly for this study. A host customer survey will be conducted for the Process Evaluation. The majority of SGIP applicants are represented by project developers, as such; host customer awareness should not be interpreted out of context.
Customer satisfaction	Both approaches performed similarly.	Customer satisfaction with the SGIP based on non-quantitative focus group data does not indicate a strong PA preference.
Supplier satisfaction	Both approaches performed similarly.	Project developers (not just suppliers) rate satisfaction nearly the same for all PAs.
Supplier comparative ratings	Both approaches rated highly; however interview results suggest a slight preference for non-utility administrator on part of some suppliers; others are ambiguous between the two.	Interviews with project developers accounting for approximately one quarter of all completed SGIP projects by PA indicate no significant difference. Comments were ambiguous. Focus group data indicate preference for single point of contact approach.

6. FINDINGS AND RECOMMENDATIONS

This section provides a summary of the key findings that are described in the preceding sections of this report. A few over-arching themes emerged during the course of data collection and analysis, and these are summarized below. After the themes, a set of actionable recommendations are outlined, specified by PA Study objective area. This is followed by a brief summary of future work, both that planned for the Process and Market Studies and other potential analysis that is outside the scope of this study.

6.1 Overarching Themes

The following six themes represent the high level findings of the research and analysis:

Theme #1: The ***differences between the PAs are nuances*** of strength and weaknesses, not one of capability or incapability.

- Many of the metrics used to evaluate PAs do not have statistically different results.
- Project developers rate the PAs almost equally.

Theme #2: ***Success stories*** **are not being leveraged sufficiently by most PAs**.

Focus group participants provided stories of a *nascent cultural shift* occurring in across a variety of market segments:

- Focus group participants referred to demonstrable green power commitment as driving business to their establishments.
- Public entities brought up the value of informational displays in school buildings to educate both students and their parents about the value of solar energy, and how local efforts can make a contribution to the state's GHG reduction targets.

More of these stories, whether describing the appeal and marketing value of sustainability, or ***describing the value proposition of the SGIP*** to a host customer, need to be captured and disseminated through a variety of channels to feed the cultural shift and demand for clean distributed power. Also, the value proposition of gas related technologies may be getting lost with the public's demand for solar.

Theme #3: ***Factors external to the program matter*** **for getting participants in and** ***keeping them in*** **the program.**

- Applicants need help understanding the most likely places an SGIP application will fail to progress, and would appreciate more of a heads-up on potential "surprises" like issues with roof warranties and air permits.
- The interconnection process is often cumbersome, and while PA status checks on participant behalf is appreciated by them, an easier process would benefit all.
- The regional variation in air boards and local building requirements is complex and difficult for even experienced project developers to navigate.
- Some project economics can vary substantially with gas prices. Cogeneration application rates correlate tightly with gas price drops.

- Many tariffs that are not solar friendly are frustrating existing and would be applicants.

Theme #4: ***Some issues and barriers to SGIP projects are structural*** to the program and mandated by other parties.

- To an applicant or developer it can feel like additional rules are continually added to the process. Many rules come from external parties that range from the legislature to air boards. This is not technically part of comparing the PA's efforts, but it is an important theme in the program.
- Due to the changes in the program from year to year, projects that span multiple years, struggle to keep track of which version of which form to file. This is onerous for both PA and applicant.
- Host customers, project developers and PAs do not understand why more technologies are not added to the SGIP.

Theme #5: Open governance is important.

- The WG process appears to have improved over prior years and is an important mechanism for PA's to share what works and does not. The process to achieve WG agreement on issues varies on whether the issue is viewed as an appropriate area of oversight for the WG. For example, determining what situations warrant extension of guidebook-defined project deadlines is an appropriate area of oversight for the WG. In this instance, it may be more productive for the CPUC to acknowledge that a one year time frame is unworkable, and to specifically grant latitude and guidance on extensions.

  - One SGIP host site *without a project developer* asked "what do I do if I have a good reason that I might not meet my deadlines?" It was clear that the participant did not know that extensions were routinely given for legitimate reasons after demonstrating Proof of Project Advancement.

Theme #6: The SGIP program appears to have stimulated the development of new business models by some PV developers, while regional differences also continue to impact business development.

6.2 Key findings and lessons learned

Key findings for each of the research objectives are presented below. Overall, while differences between the PA's approach do exist; each PA is capably and effectively administering the SGIP.

There are actions the PAs can undertake to counteract the barriers applicants and project developers encounter even though some external issues are outside their sphere of influence. Highlighting both sets of issues can help the PAs raise the profile of the issues among those parties who do have jurisdiction over them. This could help relieve some of obstacles to deploying more clean on-site generation in California.

Staffing and Organizational Structure

- PAs are similarly staffed, with the exception of SCE which is somewhat leanly staffed, relying more on other departments within SCE for some program services. This may contribute to the lower penetration rate of completed projects.

- SGIP appears to be most substantially integrated into the fabric of the PG&E organization which may account for higher program penetration rates (completed projects).

Processes

- PAs processes are mostly similar as would be expected in a statewide program.

- All PAs appear to routinely grant project extensions, as evidenced by the median SGIP navigation time of 517 days.

- Projects at SCE appear to navigate the process faster, though this may be an artifact of the data including those applicants that have been waitlisted at PG&E.

- SCE retains applicants through the later SGIP stage gates at the highest average rate of all PAs.

- Other differences include:

    - SCE appears to intercede for applicants, by checking on interconnection status, and their single point of contact approach is well received by developers.

    - SDREO does require projects to install NGO meters to help understand system impacts and value, which support later Impact and Retention Studies.

    - SDREO discusses project 'right-sizing' with applicants and conducts site visits to see if SGIP is right for the prospective applicant.

    - PG&E is challenged by the large size of their territory, particularly with respect to having multiple interconnection offices that are not always consistent in the manner in which they interact with customers.

    - Both SCG and SDREO are experiencing increases in application drop outs. SCG appears to be the most impacted by the increase in gas prices and increasingly stringent air emissions limits and SDREO's drop out increase may be the result of tariffs that are not PV friendly.

Cost Drivers and Budget Management

- PAs have roughly similar cost structures with some variation year to year that occurs due to the difference between program year incentive attribution and calendar or budget year tracking.

- As the program matures, administrative costs as a function of total active deal flow (applicants and those in process) appear to be going down.

Marketing and Outreach

- SCG differs by offering incentives to account reps for signing and moving SGIP projects through the process, advocating for a 'people do what they are rewarded to do' philosophy.

- PG&E has well organized marketing and outreach efforts. They are also the most consistently oversubscribed PA. External factors such as market attitudes and performance characteristics are also factors that contribute to this result.[39]

- SDREO is the only PA that explicitly markets the value proposition of the program through "success stories."

- SCE is somewhat more leanly staffed than other PAs and this may contribute to less emphasis on the marketing effort as compared to other PAs.

Responding to External Variation

- The PAs are limited by their ability to address the external variation issues, such as interconnection, tariffs, air quality and building department issues.

- Tariffs are the most important. Given that tariffs determine the fundamental economics of an SGIP project, a tariff can make or break a specific project. There is a wide variance of tariff structures between CPUC-regulated IOUs when it comes to tariffs that SGIP customers are able to operate under.

- The other three issues, air permitting, building construction regulations, and interconnection, are all issues that add to delays and costs for SGIP projects, but they are not typically show-stoppers, though lengthy delays can cause financial hardship for specific projects.

- The external variations discussed in Section 4 are barriers to the SGIP program, specifically, and to deploying more clean on-site generation in California, generally.

6.3 Recommendations

Recommendations are organized by key areas of research surrounding PA Study objectives.

Staffing and Organizational Structure

- Increase staff access to data or designate dedicated account managers. Since developers and applicants prefer *single points of contact* to get answers to questions, and in large organizations, one staffer cannot serve all applicants, access to relevant data is critical. PA staff must be able to answer questions in a timely and consistent manner, or projects lag.

[39] Itron, SGIP Fifth Year (2005) Impact Evaluation Final Report March 1, 2007, Appendix A. Showing performance of PV systems in PG&E territory to be better on average than other PA territories.

- Evidence of top down support for SGIP and integration of SGIP with other PA offerings appears to improve program penetration rates. PAs should continue to develop this integration and the CPUC could remove barriers to support integration. SCE would particularly benefit from additional structural support within the utility, including better marketing support.

Processes

- Continue to investigate process improvement strategies, such as the reengineering study conducted by the CEC.

- Create a users group, an online forum, or program guide that stresses common reasons projects fail, or stall. Helping applicants get it right the first time and retaining applicants through later stage gates may drive costs down. One way to do this is to invite applicants to join a listserve or to create an online forum.

- All PAs need to continue to work to ease the hassles associated with the interconnection process. Often, communications with developers and host participants from the interconnection department is poor, and unexpected changes in metering requirements can lengthen project completion cycles.

- The CPUC and SGIP WG need to make it clear to applicants that extensions can be granted and the legitimate reasons for doing so, or failing that, should consider more realistic time frames for project navigation.

Cost Drivers and Budget Management

- Cost accounting and budget projection is problematic because PA administrative budgets operate on a calendar year basis while participant incentives are encumbered on a Program Year basis. It is difficult to extract a clear understanding of the relative cost effectiveness due to these effects. The PAs could consider tracking administrative costs directly to projects.

Marketing and Outreach

- Free and earned media is underutilized by some PAs. There are many success stories that local papers/news media would embrace if properly packaged for them.

- Marketing should emphasize success stories and value proposition, not just process. Developers and applicants use the PA Web sites frequently, and this type of information should be included there.

- PAs should consider creating a users group or networking tool. Applicants know they are early adopters, in some cases, and are excited to share their information.

External Variation

By their nature, the PAs are able to do relatively little to alleviate the barriers created by these external issues. That is, PAs are not empowered to modify interconnection requirements, write and approve utility tariffs, or dictate policy to building inspectors or air quality management

district officials. However, PAs can continue to assist SGIP project developers and host customers in a number of ways to facilitate project advancement.

The following is a set of preliminary recommendations for PA's to consider in addressing the external issues impacting SGIP adoption and success.

Emissions

- Develop Web site resources/references – Provide links to local air quality management district (AQMD) Web sites from each PA's Web site. Links should go directly to the right page at the AQMD Web site so users can access:

- Facilitate a dialogue between project developers and air district representatives to educate AQMDs about SGIP clean generation goals.

Building construction regulations

- Include BCR permitting information in printed SGIP program materials. Similar to what PG&E has done in including permitting information in its Solar Power for Business flyer, permitting information could be added to other SGIP print materials.

- PAs could participate in local code organizations' meetings.

- Bring stakeholders together. For particularly troublesome or challenging projects or jurisdictions, facilitate stakeholder meetings to overcome barriers and move the project forward.

- Offer seminars that include outreach to local permitting groups. As with AQ boards, PAs can facilitate meetings and outreach efforts between developers and permitting entities.

Interconnection

- Expand public education efforts. PA offices should continue and expand public education efforts to ensure SGIP developers and host customers understand their responsibilities and timing for ensuring interconnection.

- Request that utility interconnection departments communicate approval of SGIP projects to PAs. This would allow the PA office to better track project advancement and provide coordination assistance, if needed. SCE's interconnection office already sends such communications to SCE's PA.

- Create a log of interconnection problems to address with utility interconnection departments. This material could then be used to document how significant an issue utility interconnection is to SGIP (and CSI) project development.

- Hold regular meetings with utility interconnection departments. PAs should continue or establish regular meetings with local utility company interconnection departments in order to convey issues confronting SGIP stakeholders and learn what they can to advise SGIP stakeholders to minimize delays in the interconnection process.

- Consider combining SGIP paperwork with interconnection paperwork, as both are IOU state-wide forms. This would work for most projects administered by PG&E and SCE, but maybe not as well for SDREO and SCG applications given the fact that neither of these organizations have jurisdiction over interconnection.

Tariffs

- SGIP staff should be knowledgeable about the specific ways in which utility tariffs can impact SGIP project economics and convey this information to potential SGIP applicants.

- Provide economic guidelines to allow customers to better estimate the economic viability of SGIP installations. Such guidelines need to go beyond simple payback rates and incorporate demand charges, standby rates and other tariff components that can have a disproportionate impact on on-site generation project economics.

- Consider other more system-wide approaches that work further upstream to encourage the purchase of power from clean DG by utilities such as Europe's "feed-in" laws which reduce paperwork needed to obtain SGIP-like incentives.

6.4 Recommendations for future research

- In order to capture input from areas of dense program participation, focus groups were held in urban or suburban areas. Conducting additional focus groups in rural areas could provide additional insights for program marketing. Consider additional focus groups or 'voice of the customer' research with less urban participants

- Consider periodic updates to the PA Study as better understanding of markets, processes and retention are gained. In particular the differing market characteristics of each PA territory may be a fruitful course of study as it relates to the processes and cost of SGIP type installations.

- Schedule regular PA studies at intervals of three years. This would provide sufficient elapsed time to generate data by which to evaluate PA efforts.

- Consider regular market updates to help support and evaluate the PAs efforts as they relate to the specific needs of their territory and the program more generally.

- Study whether and how to add important technologies that are not currently covered by SGIP, including hybrid technologies, such as advanced energy storage. There are significant advances occurring in the development of on-site power production, storage, and distribution technologies, creating new opportunities for building clean distributed networks.

7. REFERENCES

Blum, D. “Utility Dispatch of Customer-Sited Distributed Energy Assets.” Primen, Inc. Report DE-PP-31. December 2004.

Bonneville Power Administration Web site: http://www.bpa.gov/energy/n/projects/fuel_cell/dod_climate_change/.

California Air Resources Board, Guidelines for the Permitting of Electrical Generation Technologies, July 2002.

California Coalition for Adequate School Housing, http://www.cashnet.org/resource-center/Section1/1-1-1.html

California Code of Regulations, Title 24, http://www.bsc.ca.gov/title_24.html

California Department of Industrial Relations, http://www.dir.ca.gov/

California Energy Commission, Distributed Generation: CEQA Review and Permit Streamlining, (Publication No. 700-00-019) December 20, 2000.

California Energy Commission's Distributed Energy Resources Guide, http://www.energy.ca.gov/distgen/permitting/building_permits.html

California Environmental Quality Act, http://ceres.ca.gov/ceqa/

California Solar Center Web site: http://www.californiasolarcenter.org/incentives.html.

Committee on Ways and Means. “Detailed Summary of the Tax and Other Provisions in H.R. 611, the Tax Relief and Health Care Act of 2006.” December, 2006.

Database of State Incentives for Renewables and Efficiency, http://www.dsireusa.org

Democratic Energy, “City of Los Angeles Solar Incentive Program.” obtained from http://www.newrules.org/electricity/ladwpsolar.html, February 27, 2007.

Energy and Environmental Analysis, Inc., DG Regulations Database, http://www.eea-inc.com/rrdb/DGRegProject/Firecode.html

Five Star Consultants (Ken Regelson) for the Sierra Club. “Sustainable Cities: Best Practices for Renewable Energy and Energy Efficiency.” October 2005.

IndEco Strategic Consulting, Inc. and B. Vernon & Associates. DSM Best Practices: Canadian Natural Gas Distribution Utilities’ Best Practices in Demand-Side Management. July 2005.

Itron, Inc. for Southern California Edison. “Self-Generation Incentive Program: Administrator Comparative Assessment.” September 2003.

Joint Committee on Taxation, "Description and Technical Explanation of the Conference Agreement of H.R. 6, Title XIII, The 'Energy Tax Incentives Act of 2005'" July 28, 2005, JCX-60-05.

Los Angeles Department of Water and Power Web site: http://www.ladwp.com/ladwp/cms/ladwp004196.jsp.

Martin, Keith, "How to Work Tax Subsidies Into Renewable Energy Projects." Information Forecast, Inc. Renewable Power Project Finance Conference, December 12-13, 2006, Austin TX.

National Renewable Energy Laboratory, Making Connections: Case Studies of Interconnection Barriers and their Impact on Distributed Power Projects (NREL/SR-200-28053) May 2000.

National Renewable Energy Laboratory, Rate Structures for Customers With Onsite Generation: Practice and Innovation (NREL/SR-560-39142) December 2005.

Oregon Energy Trust. "Innovative Practices in Renewable Energy: A Review of Domestic and International Experience." August 2002.

PA Government Services, Inc. (Fagan, Jennifer and Christopher Dyson, KEMA-Xenergy; and Jeff Erickson, PA Government Services, Inc.) for the State of Wisconsin Department of Administration, Division of Energy. "Business Programs: Best Practices Report." Focus on Energy Public Benefits Evaluation. March 2003.

Peters, J. et al. "Best Practices from Energy Efficiency Organizations and Programs." Energy Trust of Oregon. Portland, OR. August 2002.

Primen, Inc. "Communications and Controls for Distributed Energy." Report DE-SR-15-05. June 2005.

Product Development Institute. Stage-Gate System internet Web site. http://www.prod-dev.com/stage-gate.shtml. January 2007. (One of many Web sites and training companies addressing product development processes.)

Quantum Consulting, Inc. "Volume S: Crosscutting Best Practices and Project Summary." National Energy Efficiency Best Practices Study. December 2004.

Time-Management-Guide.com. "Essential Goal Setting Guidelines." http://www.time-management-guide.com/goal-setting-guidelines.html. 2002. (One of many Web sites and training companies addressing S.M.A.R.T. goal setting.)

U.S. Internal Revenue Service Forms 8912 (Clean Renewable Energy Bonds) and 8835 (Renewable Electricity Production Credit), and Publication 946 (Modified Accelerated Cost Recovery).

U.S. Internal Revenue Service Notice 2005-98 "Clean Renewable Energy Bonds."

United States Environmental Protection Agency. "Chapter Six: Energy Efficiency Program Best Practices." National Action Plan for Energy Efficiency. July 2006.

United States Environmental Protection Agency. Clean Energy-Environment Guide to Action: Policies, Best Practices, and Action Steps for States. April 2006.

Wiser, Ryan and Mark Bolinger, "Federal Tax Incentives for PV: Potential Implications for Program Design." Presented to the California Public Utilities Commission, March 16, 2006.