



**SELF GENERATION INCENTIVE PROGRAM
PROGRAM ADMINISTRATOR COMPARATIVE ASSESSMENT
APPENDICES**

SUBMITTED TO:

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

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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

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**APPENDIX A:
COMPLETED INTERVIEWS AND INTERVIEW GUIDES**

Interview Subjects

*Some entities had multiple interview subjects

- Bay Area Air Quality Management District
- San Diego Air Pollution Control District
- Ventura County Air Pollution Control District
- South Cost Air Quality Management District
- City of Chula Vista
- City of San Diego
- Department of General Services
- Department of Industrial Relations
- Division of State Architect (DSA) Headquarters
- Los Angeles Department of Water and Power
- Pacific Gas & Electric
- Sacramento Municipal Utility District
- San Diego Electric and Gas
- Southern California Edison

Project Developers and Program Administrators

- Northern Power Systems
- The Distributed Energy Resource Group
- Reliant Group
- San Diego Unified School District
- 3rd Rock Systems and Technologies, PV
- Advanced Energy Systems, I/C
- Alliance Star Energy, Fuel cells
- Allied Energy Services, I/C (Non-RE Fuel), Fuel cells, Microturbines
- California Construction Authority, PV
- California Power Partners, Microturbines
- Chevron Energy Solutions, PV, I/C, Fuel cells, Microturbines
- DER (The Distributed Energy Resource Group), I/C, PV, Fuel cells, Microturbines
- DG Energy Solutions, LLC, I/C
- D&J Electric (recently merged with SunTechnics), PV
- EI Solutions (formerly Prevalent Power), PV
- Ingersoll-Rand, Microturbines

- Northern Power Systems, I/C
- Pacific Power Management, PV
- PowerHouse Energy, Microturbines, I/C
- PowerLight Corp., PV
- RealEnergy, I/C
- Renewable Technologies, PV, Fuel cells
- Solar Power Systems, PV
- SolarCraft Services, PV
- SolarGen Properties, PV
- Spectrum Energy, PV
- SPG Solar, Inc., PV
- Sun Edison/New Vision Technologies, PV
- WorldWater Holdings, PV
- Manager- SDG&E SGIP
- CPUC- WG representative
- Manager- Emerging Renewables Program
- PG&E SGIP Staff and other departments
- SCE SGIP Staff and other departments
- SCG SGIP Staff and other departments
- SDREO SGIP Staff and other departments

SGIP Program M&E
Project Developer Interviews
Interview Guide (1/5/2007)

Respondent identification number:

Respondent name:

Respondent title:

Company name:

Date and time of interview:

Interviewer:

Type of Developer:

Taped? (circle one)

YES

NO

Notes to interviewers

This topic guide is designed to help you to complete an approximately 30-40 minute interview. Remember, the qualitative research process is about discovery, not coverage. As such, try to cover all areas of investigation but, if necessary, focus on those questions that seem most relevant to each respondent or those that develop new and/or useful information. Additionally, you are not required to ask questions in the order they are given herein; allow the flow of the conversation to dictate the order in which you ask them.

Background

Energy Insights is part of the Summit Blue Consulting team that is evaluating the California SGIP. The evaluation is focused on systems installed under the SGIP in the service areas of PG&E, SCE, SCG, and SDG&E. A Working Group consisting of representatives from the Program Administrators, SDG&E, and the CEC staff associated with the Emerging Renewable Program, and the Energy Division of the CPUC is charged with the evaluation of the program through their Measurement and Evaluation subcommittee led by Jennifer Barnes of PG&E.

Taping

If you tape the interview, you must obtain explicit permission from the respondent.

Confidentiality

If respondents ask, tell them yes, their answers will remain anonymous.

Introduction

[NOTE: Energy Insights will have already qualified the respondent for this IDI prior to this point.]

Hello, my name is _____ and I work for Energy Insights. I am calling on behalf of the California Public Utilities Commission. We are conducting an evaluation of the State of California’s Self-Generation Incentive Program, and we are aware that your company has been involved as a project developer with at least one project that has applied for funding through this Program. We’re conducting a survey to obtain your views on the Program, based on your experience to date. This survey is for research purposes, and will not affect the application status of the project(s) you are involved with.

NOTE: IF RESPONDENT QUESTIONS THE LEGITIMACY OF THE SURVEY, YOU MAY GIVE THEM JENNIFER BARNES’ CONTACT INFORMATION:

**Jennifer Barnes, Senior Regulatory Analyst
Pacific Gas & Electric Company
415-973-2797
j5b2@pge.com**

Taping (optional)

With your permission, I’ll record the interview to avoid slowing down our conversation by taking all written notes. I will not use the tapes for anything other than note taking and analysis. (NOTE TO INTERVIEWER: *Taping is optional, but you must obtain consent before doing so.*)

I. Background

First, I'd like to get some background information about yourself and your company, just to provide some context for our discussion.

1.1 How long has your company been in business? Within California?

_____ Number of years in business

_____ Number of years in business in California

1.2 In what year were your [PRIMARY TECHNOLOGY] systems first installed for customers in California?

1.3 Outside of the SGIP, have you received, or are you receiving additional financial assistance or funding of any kind for any of the SGIP projects you've installed (e.g., grants, tax credits, or buydowns/rebates)? IF YES → What percent of your projects in the last two years have received additional funding? From what types of financial sources?

- 1.4 What percent (or total kW) of all of your self-generation projects in California in the last two years went through the SGIP process?
- 1.5 In the last two years, were there any self-generation projects that you tried to get through SGIP but weren't eligible? IF YES → Why weren't they eligible?
- 1.6 Have you ever seen a self-generation project that would have been eligible for SGIP go forward without applying for the SGIP? If YES → Do you know why the project(s) did not go through the SGIP? How often have you seen this happen? Even though such projects didn't go through the program, did the program have any influence on the project, such as educating the host customer on self-generation or some other influence? IF YES → Please describe the program influence you noticed on those projects.
- 1.7 Do you ever maintain ownership of the SGIP-funded equipment? IF YES → What percent of your projects do you maintain ownership for? Do these installations experience any different operational experiences (e.g., reliability, lifetime, etc.)?

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II. SGIP Process Experiences

[NOTE TO INTERVIEWERS: The purpose of this section is to find out the respondent's role in the application process, their opinions on program design issues, how the administrator(s) handled the application(s), and their knowledge of other programs that may overlap or dovetail with the SGIP.]

[NOTE: IF the company is also the Host Customer, SKIP TO 2.2.]

In order to provide suggestions on how to improve the SGIP process, I'd like your feedback on your experiences in dealing with each of the Program Administrator(s). But first I'd like to know how involved your host customer(s) are in the application process.

- 2.1 Please tell me which of these two scenarios most closely describes your host customer's involvement in the application process:
 - a. The host customer is actively involved in each stage of the application process and reviews all application materials before they're sent out.
 - b. The host customer essentially takes a hands-off approach to the application process, leaving your company to make most of the decisions.
- 2.2 Okay, now let's talk about the SGIP process, and in particular, any issues or problems that may have come up along the way. [NOTE: Probe on any of the following mentioned below.] What about...
 - a. the clarity of the Program application materials and instructions?

- b. the responsiveness of the Program Administrator (e.g., did they contact you enough)? [NOTE: If the respondent dealt with more than one Program Administrator, probe for differences among them.]
- c. the 90-day deadline for Proof of Project Advancement? [NOTE: If there were issues, probe on issues such as the air pollution permit application submission, the electrical interconnection application submission, ordering the generating equipment, obtaining proof of insurance, providing waste heat recovery calculations, providing project cost breakdowns, etc. Inquire how/if the Program Administrator assisted them in any way in overcoming these issues.]
- d. the 1-year deadline for completing the installation? (NOTE: If there were issues, probe on issues such as air pollution permitting, local permitting, meeting waste heat recovery requirements, utility interconnection, financing, etc. Inquire how/if the Program Administrator assisted them in any way in overcoming these issues.)

2.3 [ASK OF RESPONDENTS WHO DEALT WITH MORE THAN ONE PROGRAM ADMINISTRATOR.]

- a. Our records show that you have worked on SGIP projects with (NAME EACH PROGRAM ADMINISTRATOR FROM DATABASE – SCE, PG&E, SO CAL GAS, SDREO).

Having worked with more than one Program Administrator, please rate the following qualities for each on a scale of 1 to 5, where 1 means very unsatisfactory and 5 means very satisfactory. [NOTE: For any ratings of 1 or 2, probe for details.]

Qualities	SCE	PG&E	So Cal Gas	SDREO
<i>Ease of working with</i>				
<i>Timeliness</i>				
<i>Responsiveness to information requests</i>				
<i>Assistance with interconnection coordination</i>				
<i>Assistance with application materials</i>				
<i>Assistance with marketing</i>				
<i>Other comments:</i>				

- b. Have you tailored your approach for the different California markets you work in? [NOTE: “Different markets” could mean different Program Administrator territories, different geographies and associated environmental and other market constraints, different technologies, etc.] If YES → How? What challenges does this present?

- 2.4 What is the primary source of SGIP program information for you? How do you get clarification of information when you need help?

- 2.5 Have staff from your firm/organization attended program orientations or presentations hosted by the program administrators? IF YES → In what ways were those presentations helpful to you as a developer? Do you have any suggestions for ways to improve those presentations or the program outreach process in general?

- 2.6 Have you developed SGIP projects for both public and private entity customers? If YES → What percent have been for public entities?

- 2.7 [ASK OF RESPONDENTS WHO DEALT WITH BOTH PUBLIC AND PRIVATE ENTITIES.] For you as a developer, what are the key differences between public and private entities in developing and building self-generation projects?
 - a. How does the process differ for these two groups?

 - b. What does it take to successfully engage with a public entity on an SGIP project?

- c. In what ways has the SGIP been able to effectively attract and build self-generation projects given those differences? Are there areas where the program has not adequately addressed these key differences, such that projects have been hindered in some way?

2.8 [ASK OF RESPONDENTS WHO DEALT WITH PUBLIC ENTITIES – (refer to data sheet)]

- a. What about the extended amount of time now allowed for public entities to complete projects? Has this been beneficial for the public entity organizations, or is more a case of "if you provide more time, they'll take more time"?
- 2.9 What percent of host customers with whom you have helped developed projects already knew about SGIP before you became involved with them (the customer)?
- 2.10 Do you find that prospective Host Customers understand the SGIP eligibility requirements? Does this differ by segment (e.g., public vs. private, commercial, industrial, size, etc.)?
- 2.11 Have you experienced any unnecessary project delays caused by Host Customers? IF YES → What were they?
- 2.12 Has your organization incorporated information with reference to the SGIP into any of their marketing and promotional materials? IF YES → How? (For example, as part of presenting case studies to trade groups such as BOMA or other industry associations, etc.)
- 2.13 Since January 2005, what program changes – incentives, program processes, eligibility requirements or performance requirements including emissions – have had the most significant impact on your role as a project developer? [NOTE: Probe on renewable CHP, fossil-fuel based DG NOx emissions standard of 0.14 lbs/MWH that was effective in January 2005, and NOx emissions of 0.07 lbs/MWh and 60% minimum efficiency beginning January 1, 2007, etc.]
- 2.14 How much of an impact did each change have on project timelines? The number of projects applying and the number of projects completed? [NOTE: Probe for any other impact these changes might have had.]
- 2.15 In your opinion, what are the most important factors that lead to successful SGIP projects? That is, how do you define a successful project? Does that vary when working on public vs. private entities? Is continued operation of the installation an element of success?
- 2.16 What steps does your company take to ensure the reliability and continued availability of the self-generation equipment after it's installed?

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III. Market Dynamics

[NOTE TO INTERVIEWERS: This section will focus on the technologies themselves and the respondent's views of the current and future markets for each technology.]

3.1 Cogeneration/CHP

- a. Let's talk about cogeneration/CHP for just a minute. What are the most important factors currently affecting the number of CHP projects? What about the next five years – what will those factors be? *[NOTE: Probe on air emissions issues as well.]*
- b. CHP incentives are currently scheduled to be cut from the SGIP, effective January 1, 2008. What effect do you think this will have on the cogeneration/CHP market in California?
- c. There is a possibility that CHP will either be added back in to the SGIP or that CHP will have its own program. What would your preference be? Why?

3.2 Solar PV

- a. Do you think customers are waiting for the California Solar Initiative before moving ahead with plans for new PV projects? Do you think they should be waiting for the start of this new program? Are you advising customers to wait for the new solar program?
- b. What are the pros and cons of completing projects now rather than waiting for the CSI?
- c. What type of effect(s) do you anticipate the upcoming switch to the CSI will have on your business/the solar PV market?
- d. In thinking about the California Solar Initiative's performance-based incentives, what percent of your past projects do you think would have qualified for the CSI?
- e. What effect has the step-down in solar PV incentives through the SGIP had on the market? On your business?

3.3 Are there particular technology/application combinations that represent "sweet spots" for the SGIP? And on the flip side, are there technology/application combinations that simply don't work? *[NOTE: try to get as specific as possible.]*

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IV. Project Development Process

- 4.1 How much of an impact on the market or on program participation did the institution of an application fee have? How will the elimination of the fee in 2007 affect the market? [Note to interviewer: though the fee may go away for SGIP there may well be one with CSI] Do you believe the application fee achieved the goals it was intended to achieve?
- 4.2 Some projects that receive funding from the SGIP may not have been feasible without the Program, while others would have been undertaken even in the absence of the SGIP. Of the SGIP projects you're aware of, what percentage do you think would have been completed even without the SGIP's financial support?
- 4.3 What about leased systems? Are there unique problems/issues with developing leased systems through the current SGIP? IF YES → What types of problems/issues?
- 4.4 On a scale of 1 to 5 please rate the impact of the Program on the market development needs of the energy services industry, where 1 means no impact and 5 means a significant impact.
- 1 2 3 4 5
- 4.5 In your opinion, has the Program provided support for the energy services industry to market the Program? IF YES → How has this support been provided?
- 4.6 In your opinion, has the Program made a contribution to host customer education with respect to self-generation technology? IF YES → How?
- 4.7 Have you experienced any difficulties with... (Circle all that apply) [NOTE: probe if yes to any of the below.]
- 1 connecting distributed generation system projects to the grid?
 - 2 [For PV and Wind] obtaining information about net metering? Installing and managing net metering equipment?
 - 3 the inspection and approval of your system by the utility?
 - 4 receiving adequate Local Building Department support/information regarding the installation of distributed energy systems? [NOTE: probe on issues like permitting/building code requirements and safety inspection/approval.]
 - 5 [FOR CHP PROJECTS] receiving a permit for a project from the local air quality management district.
- IF YES → What type(s) of difficulties did you have?

4.8 In the absence of the SGIP, would the current development of the energy services industry in California be any different than what it is today? IF YES → How so?

4.9 Please rate your overall satisfaction of the SGIP on a scale of 1 to 5, with 1 being very dissatisfied and 5 being very satisfied.

1 2 3 4 5

4.10 Is there any support/information you need from the SGIP or its Program Administrators, that you don't already receive, that would help you in the project development process? IF YES → Please describe.

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V. Conclusion

I've got just one more question, and then we'll wrap things up.

5.1 What was your approximate sales volume in California in each of the past two years, in terms of the number of [TECHNOLOGY TYPE] units (modules/wind turbines/fuel cells/small or micro-gas turbines/IC engines) and total kW (or total \$, if available)?

_____ Total number of units in 2004 _____ kW sold in 2004

_____ Total number of units in 2005 _____ kW sold in 2005

5.2 Is there anything I haven't asked you about on which you'd like to comment? Any other Program changes/things that worked well that we didn't cover?

I want to thank you again for your participation in this SGIP evaluation. We really appreciate it.

SGIP Program M&E

Program Administrator Interviews

Interview Guide (1/7/07)

NOTE: Scripting and formatting to be further detailed once guide content is set and per administrative approach (e.g. telephone or in-person). Introductory script to include acknowledgement of past evaluation interviews and related interactions/information provisioning, and a statement of the interview's focus on issues associated with fulfilling the following key PA comparative assessment objectives, and prospective program improvements related to them:

1. Effectiveness criteria
2. Compare program management efforts, administrative processes, and marketing and outreach efforts
3. Consider the implications of different organizational and strategic/tactical approaches to the program, and
4. Understand external market variations and their influences on relative PA effectiveness, including issues such as emissions and building construction regulations, local utility rates, interconnection processes/permits and other external influences that differentially affect PAs' program efforts and their effectiveness.

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Interview Date:

Interviewee Name:

Interviewee Title:

Interviewee Organization and Dept.:

Interviewee Contact Information:

Telephone:

Email:

Interviewee's primary program role:

Interviewee's start date with SGIP PA office/length of tenure in SGIP PA role

(If interview done with other staff):

Other Interviewee Name/Title/Role/Tenure:

Other Interviewee Name/Title/Role/Tenure:

Other Interviewee Name/Title/Role/Tenure:

Reference Materials Provided by Interviewee(s), either before or after interview:

- Organization diagram or outline – program and related staff in other PA depts.

- Current and past marketing plans
- Program budget data showing staff labor, marketing & outreach , administrative and other expenses
- Available marketing collateral
- Advertising and Promotion – activities and events list and schedule
- Lists of project developers, related trades, end customers and others to whom marketing and outreach efforts have been directed and information provided
- Training/workshop events list and associated attendee lists
- Training/workshop materials
- Other materials/data as needed or referred to during the interview

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I. Background and Retrospective on Key Effectiveness Factors

Purpose is to get information about what program changes PAs think have most influenced PA effectiveness and to focus the rest of the interview on the most critical effectiveness issues.

1. First, in order to set the stage for the rest of the interview, I'd like to step back for a moment and ask you to think about the program's genesis and evolution to date. I'll ask you to identify what you think are the most critical aspects of the program and its development over time that you think have had a major impact on your organization's effectiveness as a PA. I have a list of program-related topics and functions for that purpose. I'll first read the list so you get a sense of what we'll cover, then for each topic or function I'll ask you to briefly summarize the program aspects and developments that you think have significantly affected your organization's effectiveness as a program administrator, in particular those issues you think are important as the program goes forward. Getting your general insights this way will help us focus the remainder of the interview more effectively, as well as give an overarching sense of what factors are most critical and have been most influential to your organization's effectiveness as a program administrator.

1.1. So, what key program aspects and developments, in your opinion, have significantly influenced your organization's effectiveness as a PA? Let's start with...*[state items in order listed below a-f]* What two or three issues in this area have most impacted PA effectiveness? *[Note respondent comments, then ask...for main issues in each topic area]*

1.2. Why do you think that, very briefly? *[If respondent goes on at length, break in and remind them this is just an initial overview and the subject can be probed further into the interview, where particular topical areas, such as those being identified up front here, will be more thoroughly probed.]*

a. Legislation and CPUC oversight

Effectiveness issue 1:
Reason it has influenced effectiveness:

Effectiveness issue 2:
Reason it has influenced effectiveness:

Effectiveness issue 3:
Reason it has influenced effectiveness:

b. Program design

Effectiveness issue 1:
Reason it has influenced effectiveness:

Effectiveness issue 2:
Reason it has influenced effectiveness:

Effectiveness issue 3:
Reason it has influenced effectiveness:

c. (Respondent's) PA organization and management [*prompt as needed:*] includes organizational structure, staffing levels and skill sets, planning and budgeting processes, organizational relationships to internal and external resources to leverage the program

Effectiveness issue 1:
Reason it has influenced effectiveness:

Effectiveness issue 2:
Reason it has influenced effectiveness:

Effectiveness issue 3:
Reason it has influenced effectiveness:

d. Markets [*list & discuss individually*]:

1) End/host customers

Effectiveness issue 1:
Reason it has influenced effectiveness:

Effectiveness issue 2:
Reason it has influenced effectiveness:

Effectiveness issue 3:
Reason it has influenced effectiveness:

2) Self-generation energy services industry

Effectiveness issue 1:
Reason it has influenced effectiveness:

Effectiveness issue 2:
Reason it has influenced effectiveness:

Effectiveness issue 3:
Reason it has influenced effectiveness:

3) Technology

Effectiveness issue 1: *[prompt whether specific technologies have reliability characteristics that have impacted program]*

Reason it has influenced effectiveness:

Effectiveness issue 2:

Reason it has influenced effectiveness:

Effectiveness issue 3:

Reason it has influenced effectiveness:

4) Other Functions, policies, etc.

Effectiveness issue 1:

Reason it has influenced effectiveness:

Effectiveness issue 2:

Reason it has influenced effectiveness:

Effectiveness issue 3:

Reason it has influenced effectiveness:

e. Marketing and Outreach

Effectiveness issue 1:

Reason it has influenced effectiveness:

Effectiveness issue 2:

Reason it has influenced effectiveness:

Effectiveness issue 3:

Reason it has influenced effectiveness:

f. Administration *[prompt as needed:]* Includes application processing, tracking and oversight of projects, incentive processing, verification, data management, other administrative functions)

Effectiveness issue 1:

Reason it has influenced effectiveness:

Effectiveness issue 2:

Reason it has influenced effectiveness:

Effectiveness issue 3:

Reason it has influenced effectiveness:

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Now, let's keep these issues in mind as we proceed through the remainder of the interview – we can talk about them in greater depth as we go along. *[Throughout the remainder of the interview, refer back to and further probe on the factors the interviewee identified above.]*

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2. There has been some debate over time about whether PAs have potential conflicts of interest that may prevent them from being as effective in administering the program as they might be without conflicts of interest. The primary concern historically has been that utilities may be less effective as PAs because of concerns that the program undermines utility revenues, thus resulting in a lesser commitment to the program's success. On the other hand, the program may indeed be effectively supported by utility PAs because it aligns with utilities' desire to provide customers with energy services that customers value to help manage energy costs.

2.a. How has your organization viewed that debate **historically**?

2.b. How does your organization view the debate over conflicts of interest currently and going forward?

2.c. *[Ask SDREO:]* From your perspective as a relatively independent PA (understanding there is the relationship with SDG&E), what, if any, conflicts of interest have you seen any of the utility PAs experience that may have affected their commitment to the program or other kinds of effectiveness?

2.d. *[Ask utility staffs:]* Do you see any conflicts that a third-party PA might have that would influence its effectiveness as a PA?

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Getting more specific now, I'll revisit each of the topics we just touched on and ask you to keep three things in mind as you address each question:

First, the approach your organization has taken to organize for and administer the program as it concerns that area, particularly as it has consequences for program success;

Second, key differences you see between your organization and other PAs in that area, again including the implications for program success due to those differences, and

Third, how effective you think your organization has been in that area, comparing to program goals, internal performance metrics and compared to other PAs, and why you think that.

As we talk, we can get into greater depth on the issues you initially identified as being important to your effectiveness as a program administrator.

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Program Design, PA Program Planning & Budgeting

3. Eligibility

3.a. Regarding host customers, are there eligibility concerns that constrain the potential market?

3.b. Have Project Sizing Constraints been an issue?

3.c. Did the change to allow 5 MW Level 2 & 3 projects (Level 2: wind turbines; Level 3: fuel cells, internal combustion engines, microturbines, and large and small gas turbines (all renewable, non-renewable and waste gas fuel) increase the number and total kW of projects participating? Why or why not?

3.d. Have there been major concerns in re-categorizing technologies by the technology categories now being used (level 1/PV, 2/Other Renewable (fuel cells, internal combustion engines, microturbines, and large and small gas turbines), 3/Non-renewable (fuel cells, internal combustion engines, microturbines, and large and small gas turbines)), that have affected your organization's program performance?

3.e. What concerns does the upcoming change in technology eligibility mean to your organization as a PA, and your effectiveness in meeting program goals? *[Re: cogeneration and non-renewable techs not being eligible after 2007]*

3.f. What about the CSI (more on this below, but considering technology eligibility specifically) – how will moving solar technologies to the CSI affect your organization as a PA, and your effectiveness in meeting program goals?

4. Incentive Structure

4.a. Have \$ levels for different technologies been high enough to attract marginal projects? How would incentive level changes incrementally affect the number and kW of projects participating in the program?

[ASK SCE & PG&E] How does the PA interact with tariffs department in coordinating utility tariffs with incentives? Does PA office provide advice to SGIP applicants as to tariff options that could support SGIP project development?

[ASK SDREO & SoCalGas] How do local utility tariffs (SCE, LADWP, SDG&E, etc.) facilitate or obstruct SGIP project development? Does PA office work with electric utility tariff department personnel to help SGIP applicant in identifying/selecting tariff most favorable for project development or identify tariff issues that could economically hinder projects? Does PA office work with electric utilities to identify and help SGIP applicants pursue incentives offered by electric utilities (principally LADWP & other municipal utilities) that might be available for SGIP project developers?

4.b. Have the relative differences in incentive levels (e.g., % of first cost covered by incentives) been a concern? How so? What changes would address the concern?

4.c. What effect have the reductions in incentives had on participation rates?

4.d. Have the even allocations of incentives across technology categories been a concern (i.e., artificially limited participation by certain technologies)?

4.e. What effect on project participation has there been from removing cost % caps?

4.f. Are there any future incentive level and nomenclature modifications planned?

- 4.g. What other concerns or successes have there been regarding incentives, including disbursement and related administration processes?
5. Application process, including fees
- 5.a. Has the application process been a significant barrier to participation in any way – if so, how?
- 5.b. How have application process concerns been handled by your organization – what has been the effect on the number of applications and subsequent project completions?
- 5.c. Have application fees reduced gaming? What types of projects have been most affected by the fee?
- 5.d. What application process quality and performance metrics do you use?
- 5.e. Are there other important issues concerning the application process that your organization has encountered? How have you handled those? Are these unique to your situation or have you seen them crop up with other PAs?
6. Project verification and quality assurance process
- 6.a. What information do you require from developers and host customers? Is there anything unique about your requirements compared to other PAs that has helped your process be particularly efficient?
- 6.b. What performance metric is used for measuring verification and quality of projects?
- 6.c. What percent of completion verifications have not met your performance metrics?
- 6.d. What other verification or quality assurance process issues have you encountered? Are these unique to your PA situation and market? How have you addressed those issues?
- 6.e. What role has the PA had in assisting SGIP Level 3 applicants, applicants applying for funding for non-renewable fuel cells, non-renewable and waste gas fuel microturbines and small gas turbines, and non-renewable and waste gas fuel internal combustion engines and large gas turbines, in meeting local air quality regulations? [Query for details if PA has done anything.] Has the PA met with officials from the local air quality management district (AQMD) to help facilitate permitting? What information did the PA provide the AQMD on the SGIP? Response from the AQMD?
- 6.f. What role has the PA had in assisting SGIP applicants in local building construction regulations (building codes)? [Query for details if PA has done anything.] Has the PA had any contact with local inspectors/agencies charged with permit issuance? If so, please provide details, including substantive PA actions and response from inspectors/agencies.
7. Grid interconnection
- 7.a. What technical requirements have been problematic? How has your organization handled those problems?

7.b. What concerns do you have regarding overlapping interconnection verification requirements with other project verification requirements? How has your organization handled those concerns?

7.c. What other grid-related issues have been problematic? How have those been resolved by your organization?

7.d. *[ASK PG&E & SCE]* What interactions has the PA had with your internal interconnection department in resolving SGIP applicant interconnection issues? Have you assisted applicants in meeting IC requirements? If so, how would you rate these efforts? Successful, partially successful, unsuccessful? *[Ask for specifics of what they have done, if anything.]*

7.e. *[ASK SDREO & SoCalGas]* How have you worked with the local electric utility's interconnection office to resolve interconnection issues for SGIP applicants? *[Ask for specifics of what they have done, if anything.]*

8. Ongoing developer and host customer relations

8.a. What problems have arisen in your organization's efforts in providing technical support to developers and host customers? How has your organization handled those problems? Are there particular successes your organization has had in overcoming technical support problems?

8.b. What M&V concerns does your organization have with respect to developer and host customer relations? How have you handled those, and what outcomes occurred?

8.c. What other developer and host customer support concerns have you had? How have you handled those?

9. Advent of the CA Solar Initiative and transfer of solar technologies to the CSI

9.a. What effect on your organization's approach to the SGIP do you see the CSI having in the next year or so on...

- 1) Your organization and staffing?
- 2) Program budgets and goals?
- 3) Program operations?
- 4) What about the longer term, beyond next year?

9.b. What effects do you see the CSI having in the marketplace in relation to the SGIP?

10. Let's discuss the unique set of issues created by leased systems. What has been your experience been in dealing with these types of systems. For example, do you know how long these systems are typically retained on site? What technologies are typically leased? Is the current incentive structure appropriate for leased systems?

11. Let's now discuss system failures. Are you aware of specific sites where systems are known to have been removed or the property has been sold since project development?

12. Are there any other changes to the overall program design that are planned for the future years of the program that may not be discussed in the current handbook?

Organization, Cost Drivers and Budget Management

13. Staffing *[NOTE: organizational information should be available per project information request; if not, request organization charts and staffing data as available; likely follow on data request for cost information.]*

13.a. What is the location of program staff in your organization?

13.b. How do approach and manage staffing: internally to the program? Coordinating supporting efforts external to the program? For example a number of staff are likely involved in the program, by function they may include:

- Management
- Professional and technical
- Account reps and supporting staff in the field (as appropriate)
- Administrative
- IT staff
- Other staff

13.c. What difficulties or successes have you had in obtaining the staff needed to effectively administer the program?

14. Annual budget *[NOTE: budget data will be obtained through follow on data requests]*

14.a. How does that allocation of your program budget that goes to labor, marketing and outreach and administration, affect what your organization can accomplish in attracting developers and host customers, and in operating the program functions you perform?

14.b. Has the 5% cap on administrative costs significantly impacted your effectiveness as a PA?

14.c. What limitations in program activity have been imposed by the available program budget?

14.d. What incremental implications would there be if the budget were to increase? Implications if budget is decreased?

14.e. *[For SDG&E and SDREO...]* To what extent has there been budget duplication to handle overlapping program functions (i.e., project reviews, field support)?

1) How have you coordinated with [SDG&E, SDREO] to minimize your combined costs?

2) What concerns do you have regarding any duplication of functions and costs?

15. Cost Drivers

15.a. What factors make program costs most volatile, that most affect administrative cost/project or cost/kW?

- 15.b. Which factors do you feel are outside your control as a PA?
- 15.c. How does your organization manage controllable cost drivers to ensure you stay within the program budget?
- 15.d. Do you have a sense of how much time and effort other departments within your organization spend on promoting or tracking SGIP efforts – for example, Key Accounts, Interconnection, Marketing etc.?
- 15.e. For SDREO/SCG – Do you have a sense of how much time and effort other entities spend promoting or tracking SGIP efforts? (E.g., key accounts at SDG&E or SDG&E interconnection department)

Marketing and Outreach

16. How are your staff deployed to promote the program and conduct outreach to various energy services project developers and host customers?

17. What unique marketing and outreach tactics does your organization use, compared to other PAs?

17.a. What has been the result of those tactics in terms of...

- 1) Raising the level of developer and host customer awareness?
- 2) The volume of initial project applications?
- 3) The number of completed projects?

17.b. How has PA used electric utility account representatives or others in utility to market/promote SGIP program? [Request details on what was done and what worked/didn't work if preceding question is answered positively.]

18. *[If not mentioned in 14]* In what ways do you target particular market segments of project developers, host customers or others in your marketing and outreach efforts?

18.a. In what ways has your targeted marketing paid off in terms of

- 1) Raising awareness, as compared to more generalized marketing and outreach?
- 2) The volume of initial project applications?
- 3) The number of completed projects?

19. In what ways do you target particular technologies in your marketing efforts?

19.a. In what ways has your technology targeting affected participation by developers or host customers using a particular technology?

20. What market segments – developers, host customers and technologies – have been the most responsive to your marketing and outreach efforts, and why so?

- 20.a. Which segments have been least responsive, and why?
21. Are there marketing and outreach strategies or tactics you would like to use, but have not used to promote the program?
- 21.a. How many more project applications do you think you would see if you could try those strategies or tactics, and why do you think that?
- 21.b. Why have you not yet tried those strategies or tactics?

Administrative Operations

22. What program support training do you provide to project developers and host customers?
- 22.a. In what ways have your training efforts affected developer and customer expectations of the program?
- 22.b. In what ways has the administrative processes of the program benefited from your training efforts? [*Prompt as needed: effect on basic awareness, project applications being complete and accurate, project verification inspections being more efficient, and other administrative processes being more efficiently run*]
23. What current issues do you see concerning project advancement requirements?
- 23.a. What has been the effect of lengthening the time frame for project advancement of public entity-hosted projects? In particular, have public entity projects achieved a higher completion rate, or have they simply used the additional time available
24. What percent of project applications in 2006 were not completed within their required advancement requirements? [Interviewer should have spreadsheet ready with this data and be ready to discuss.]
- 24.a. What fraction of those incomplete projects were withdrawn but then re-started as “new” projects subsequently? Why are those being withdrawn?
- 24.b. What fraction have been suspended while various requirements are being satisfied? Why are those being suspended?
- 24.c. Of the projects being rejected, what are the reasons for their being rejected?
- 24.d. What uniquely positive approaches does your organization employ to minimize projects being withdrawn, suspended or rejected? What makes those approaches effective?
- 24e. [*If not already mentioned*] Are requests for extensions to advancement requirements increasing or decreasing, and to what do you attribute that trend?
- 1) [*If increasing numbers of extensions*] What concerns do you have about this trend, and what actions is your organization taking to address the situation?

25. For projects in your PA territory, what project milestones have been the most problematic for developers and host customers to meet? [*Prompt as needed: Product/manufacturer selection,*

developer/installer selection, providing cost estimates, insurance requirements, interconnection requirements, emissions and construction permits, obtaining warranties, operational performance testing.]

25.a. In what ways has your organization worked to successfully overcome those milestone difficulties?

25.b. Are there intractable difficulties in the project development process that have prevented timely completion of projects? What are those and why do they seem intractable?

26. What difficulties have you experienced with project verification process?

26.a. What actions has your organization taken to improve the verification process? Why have those actions been more effective than other solutions?

26.b. *[If not already mentioned]* What interval metering and associated meter data management difficulties have you experienced? How has your organization resolved those difficulties? *[Prompt as needed: meter installation, data retrieval, data forms and format, etc.]*

1) Is there anything unique about your organization's approach to project verification that you think has had a particularly beneficial impact on verification efficiency?

27. What difficulties have you had with the incentive disbursement process?

27.a. What has your organization done, that's unique, to improve the incentive disbursement process? Why has that been more effective than other solutions?

28. What concerns have you had to address regarding program participation tracking and reporting (including Statewide Program Compliance database to avoid inter-program/utility incentive overlapping, and actions to prevent incentive overlaps)?

28.a. What has your organization done, that's unique, to improve the tracking and reporting process? Why has that been more effective than other solutions?

29. Has the requirement to track and report renewable fuel cleaning been a major problem for your organization, or for developers or host customers?

29.a. In what ways has your organization addressed renewable fuel cleaning tracking and reporting to make it as least burdensome as possible?

Other Functions

30. Do you have any comments on other program functions we haven't discussed that you'd like to offer? (Such as project tracking requirements and how this function has evolved over time.)

=====

We're just about through the list of topics I have. I want to close our discussion by asking about several miscellaneous issues that you may want to comment on as they concern the program's future.

Other Issues – Prospective Focus

31. What technology trends – costs and availability, including sales and service – do you see over the next several years that could significantly affect the SGIP as it is currently designed and for the technologies it addresses?

32. What future changes in the program's key markets and the value chains in those markets do you think will significantly affect the SGIP in future years?

32.a. Do you see a concern about energy prices generally, but electricity and natural gas in particular, focusing on future price uncertainties?

32.b. Do you see problems or opportunities regarding the "fit" of self-generation technologies with end-use market energy needs?

32.c. Do you see problems or opportunities regarding customers' view of self-generation hosting as a valued energy solution for them?

33. Where are key market actors concerns focused on over the next several years with regard to the program's objectives and value proposition to those actors?

33.a. Manufacturers?

33.b. Equipment suppliers and contractors?

33.c. Energy services companies (engineering, financial and operating support services)?

33.d. Host customers?

34. What concerns do you have regarding the following legislative and regulatory issues?

34.a. Past and potential future legislative changes to the program, beyond the CSI already discussed?

34.b. CPUC oversight & program design or rule changes?

34.c. PURPA buy-back rule changes (cogeneration QFs, if any in the program)?

34.d. Emissions regulations?

34.e. Construction permits?

34.f. Operating permits?

- 34.g. Reliability compliance for Level 3 projects (i.e., for non-renewable fuel cells, non-renewable and waste gas fuel microturbines and small gas turbines, non-renewable and waste gas fuel internal combustion engines and large gas turbines)?
35. What geographic or other regional differences in the issues we've been discussing are either helping or hindering your effectiveness as a PA as compared to other PAs?
- 35.a. What actions, in your opinion, would help overcome the regional differences that have hindered your effectiveness as a PA that, if taken, would result in greater participation or some other measure of your effectiveness as a PA?
36. What is your view of whether the SGIP has significantly transformed the energy services market? For example, has the number and capabilities of energy services companies increased, and are energy service companies who develop SGIP-types of projects becoming less reliant on the program for such projects?
37. In closing, do you have any last comments regarding your organization's experience with the program that could be stated as key lessons learned, and that you think ought to be considered in future program developments? In particular, are there aspects of your organization and its approach to administering the program that you feel have been uniquely effective in influencing program awareness and participation, and also cost-effectiveness?
- 37.a. Are there particular barriers to applying any such unique approaches to program administration your organization has employed on a statewide basis?

SGIP Program M&E
CEC/CPUC Staff Interviews
Interview Guide (1/20/07)

Interview Date:

Primary Interviewee Name:

Primary Interviewee Title:

Primary Interviewee Organization and Dept.:

Primary Interviewee Contact Information:

Telephone:

Email:

Primary Interviewee's primary program role:

Other CEC or CPUC staff:

Other Interviewee Name/Title/Role:

Other Interviewee Name/Title/Role:

Other Interviewee Name/Title/Role:

Introduction/Background

The purpose of this interview is to identify the issues, concerns and opportunities CEC/CPUC staff think are important for the SGIP. From their perspective, what has been effective about the program and what hasn't been effective, considering all the dimensions of the program including the various markets the program is trying to influence, the program's design, its operation by the various PAs, how well the regulatory process has worked in overseeing the program and other matters that CEC/CPUC staff think are important to address as the program evolves in relation to other DSM program developments in California.

1. Please describe your history as CEC/CPUC staff with the SGIP:

1.a. How long have you been assigned to handle it?

1.b. What's been your role?

- 1.c. How well did you develop your knowledge of the program and all the market actors involved, such that you can do your oversight job effectively? (on a 1-5 scale, 1=Not well at all...5=Extremely well)

[If group interview, explore for each person – note that responses will not be associated with a given individual.]

2. Are there any tools or additional information that would help you as a regulator involved with the program?
3. Program Design and PA's Program Planning. In light of your experience with the SGIP, please provide your perspective on the following aspects of the program's design and the various PA's planning to implement it. Specifically tell me two things: first, what strengths and weaknesses do you see that are critical to the program's success or failure, and second, what you think would be appropriate changes that would either improve the program itself in various ways, or improve your effectiveness as regulatory staff?

3.a. Eligibility

- 3.a.1) During your tenure as CEC/CPUC program staff, have changes to the program's eligibility rules improved the program, or not, and why is that?
- 3.a.2) What strengths, weaknesses and potentially positive changes in eligibility rules do you see going forward?
- 3.a.3) Are there particular eligibility rules that are of concern to you as a regulatory staff person, such as project sizing constraints, technology categorizations, etc? What are those and why are they a concern? What resolution do you see that would mitigate the concern?

3.b. Incentive Structure

- 3.b.1) In what ways do you think the incentive structure of the program has affected the program's achievements, either positively or negatively, and why do you think that?
- 3.b.2) What lessons for future program developments – whether SGIP-specific or other programs involving self-generation – do you see as a regulatory staff person as being helpful to program success?
- 3.b.3) Are there particular aspects about the program's incentive structure that present problems or have been particularly successful? Consider such issues as the dollar level of the incentives, the relative differences in incentive levels among technologies, the effect on participation rates from incentives being reduced over time, cost caps being removed, etc.
- 3.b.4) What incentive developments would make for more efficient regulatory oversight?

3.c. Application Process

- 3.c.1) What, if any, difficulties with the program's application process have you noted from your perspective as a regulatory staff person – does the application process present any major barriers to prospective project developers and customers?
- 3.c.2) Have application fees been effective in reducing project gaming?
- 3.c.3) Have you had to deal much with the application process of any of the PAs, in terms of handling complaints or procedural problems that get escalated to the CPUC? If so, has handling those situations been a major or a minor regulatory concern?

3.d. Verification and Quality Assurance

- 3.d.1) What, if any, difficulties with the program's verification process have you noted from your perspective as a regulatory staff person – does the verification process present any major barriers to project developers and customers?
- 3.d.2) Has the CPUC had to become involved with any particularly difficult cases where verification was problematic and customers, developers or PAs were at significant odds regarding the procedures or outcome of the verification process? If so, what resolution was achieved and what insights for the future might be gained from the experience?

3.e. Grid Interconnection

- 3.e.1) What grid interconnection issues have you had to deal with for SGIP projects, and how have those been addressed?
- 3.e.2) What outstanding interconnection issues are there that still need to be addressed from your regulatory perspective in order to further streamline the program or otherwise help it be more successful?
- 3.e.3) Are there regulatory overlaps regarding interconnection that you think need to be addressed and, if so, where do those exist and what do you think should be done to address them (including doing nothing, perhaps)?

3.f. Developer and Host Customer Relations

- 3.f.1) As regulatory staff, are you noting any particular PA, developer or host customer relations issues that need to be addressed? What are those and what thoughts do you have about resolving those?

3.g. Advent of the CSI and Other Potential Programmatic Developments

- 3.g.1) With the advent of the CSI, what effects do you think that initiative will have on SGIP, aside from the obvious shift of PV technology to CSI? Will there be other effects, and what will those do to the SGIP?

3.h. PA Staffing

3.h.1) Do you think PAs have staffed the program effectively, or are there areas where you think any of them could improve their staffing – whether organizationally or in professional and technical skills?

3.i. Program Cost Drivers and PA Budgeting

3.i.1) What major cost drivers to the program do you think are outside the PAs' control? Within their control?

3.i.2) Are PAs adhering to the administrative cost cap requirement? Are there perhaps costs being incurred by PAs that are not being fully accounted for in their program-specific budgets (that is, are included in other, non-SGIP budgets), and are there particular problems in this regard for any of the PAs? To the extent there may not be fully in-program budget accounting of all the PAs' costs, how great a concern is this to the CEC/CPUC?

4. Program Implementation. Next, let's discuss the program's implementation: PA's marketing and outreach efforts, and their administration of the program. Again in light of your experience with the SGIP, please provide your perspective on those aspects of the program. As with the design and planning discussion, tell me two things about your perspective on the program's implementation: first, what strengths and weaknesses do you see that are critical to the program's success or failure, and second, what you think would be appropriate changes that would either improve the program itself in various ways, or improve your effectiveness as regulatory staff overseeing the program's implementation?

4.a. PA Marketing and Outreach

4.a.1) What significant differences have you noticed across the PAs' various marketing and outreach efforts?

4.a.2) What influence do you think those differences have had in either the market or technology mix of projects in each PA's territory, or total capacity development for that PA?

4.a.3) What marketing and outreach issues, if any, have major program actors had that have been brought to the CPUC for resolution?

4.a.4) What marketing and outreach strategies either are not being utilized that should be, or are being used that should be changed or stopped? Why is that?

4.b. PA Administrative Operations

4.b.1) Have you had to deal with any problems concerning the program application process? What were those and what are the lessons they teach for the future?

4.b.2) Do you think the proof of project advancement process has been a barrier to projects being brought into the program? Why or why not?

- 4.b.3) Similarly, have you thought the project completion deadline has been a major barrier to projects – why or why not?
 - 4.b.4) Has the extension of project completion for public entity projects had a significant effect on program oversight, in terms of dealing with project extension requests or other concerns? In what ways has the change affected your program oversight?
 - 4.b.5) Has the incentive disbursement process been a regulatory issue? (e.g., getting checks to customers/developers in a timely manner) If so, in what way and where has the problem been? How could such problems be avoided in the future, in your opinion?
 - 4.b.6) Have the PAs done a good job of program tracking and reporting? In what areas could improvements be made, and by whom?
5. Regulatory Issues Considering the discussion so far, I'd like to explore the key regulatory issues associated with the program, whether at the legislative level, the CPUC level or other regulatory contexts such as emissions regulation.
- 5.a. What regulatory issues have had the greatest impact on the program historically?
 - 5.b. What regulatory issues do you see being critical to the program's success or failure in the future, and why do you think those are critical?
 - 5.c. Beyond the CSI, what do you see the direction of future legislative and regulatory directives being such that SGIP or similar programs would be significantly affected?
 - 5.d. What changes ought to be made to improve the regulatory process for programs like SGIP?
 - 5.e. Are there regional or local regulatory issues that have impeded the SGIP in the past or could do so in the future, such as emissions regulations and permitting, self-generation project construction and operational permitting, or reliability compliance requirements? What are the key issues you see and how do you think they will affect SGIP or similar programs?
 - 5.f. Has SGIP required a relatively greater or lesser effort from you as a regulatory staffer than other programs, considering the programs' size, budget, etc?
 - 5.g. What changes in regulatory oversight do you think would be appropriate, and why so?
6. General Market Developments. Stepping back from the program's implementation and regulatory perspective, let's talk about general market developments – the broader context within which the program has operated and which affects the program in various ways.
- 6.a. Do you think customers have a natural affinity for the SGIP program concept in terms how they view the utility and energy service value proposition? That is, is the host customer's culture and view of how they want to get their energy supplied conducive to this type of program? In what ways do you think so, or not, and what importance do you think this issue has for the program's future market potential?

6.b. Is the self-generation market transforming yet, such that manufacturers, equipment suppliers and contractors, energy service companies and host customers are beginning to understand and participate in the self-generation market without the sort of program SGIP has been historically? If not, where do you see the market at this point with regard to its transformation to support a self-generation industry?

6.c. Are there geographic or other regional differences that affect SGIP that should be addressed but are not being adequately addressed at this time? What are those and how should such differences be addressed in the program's regulatory oversight?

7. Other Issues/Close

7.a. Past evaluation work developed various program effectiveness criteria:

7.a.1) Do you have any comments regarding those criteria as to which are most useful or least useful?

7.a.2) Any that are missing?

7.a.3) Any that should be changed – if so, how?

7.b. Has there been adequate follow-up by PAs to address past evaluations' recommendations, or not? Where could there be additional follow-up, and by which PA(s) that would most help the program going forward?

7.c. What are your expectations for SGIP's future in relation to other program developments, including CSI and other potential programs?

7.d. Do you have any closing thoughts on issues we haven't discussed here?

SGIP Program M&E

Participating Host Customer Focus Groups

Interview Guide (1/24/07)

Introduce Focus Group Topic and Participants

(NOTE: From the recruiting process, participants will already have a general sense of what the session is about – general topic of the program, discussion with other participants about the program and the participants’ experience with it, etc. The introduction will further review the purpose of the session as part of the initial discussion “warm-up,” to get participants comfortable with the setting and begin focusing their thoughts.)

Introduction:

Thank you all for coming to talk about your experience with the Self-Generation Incentive Program (SGIP). As participants, you’ve no doubt had many thoughts about your experiences with program, what you would do differently if you were to start over, where things went right or wrong, etc..

What we’ll be doing here today is working through an outline of various topics related to the program and ask for your frank opinions about each topic. The strength of a focus group is to share your thoughts about a particular topic, listen to others’ thoughts about the topic and build on those through a group discussion. There are no “right” or “wrong” answers here, by the way – what’s most important is that you be frank in stating your thoughts.

I’ll share with you that we have some folks monitoring our discussion today, but don’t worry about them because they’re keenly interested in what YOU have to say. That’s why it’s so important that you be honest with your thoughts as we talk about the different topics we’ll cover. Also, it’s important that everyone contribute to the discussion, so that everyone gets their say, so if I notice someone being shy I’ll try to be sure their thoughts get shared as well as those of us who are more talkative. Is everyone ok with that, I hope? (Look around for agreement, then proceed.)

State the Purpose of the Focus Group:

The first purpose of this discussion is to get your perspective about how well the program has done in serving your energy needs. I’d like to hear what you think, as a host customer, are the various strengths and weaknesses of the SGIP program in serving your energy needs. Not only in serving your needs but, through working with you as customers, how the program is meeting its statewide objective of developing a market for self-generation products and services.. Also, in your mind how do you see the program in relation to other energy programs, including; energy efficiency programs, demand-response or load management programs, and programs to develop renewable energy and cogeneration.

A second, closely related purpose of the discussion is to get input from you to help guide the future direction for the program. Along those lines we’ll explore some possible options and get your thoughts about those. Any questions about what we’re here for and what will be discussed, before we introduce ourselves? (If yes, field the questions and clarify the purpose of the discussion – deflect topical questions to the primary discussion.)

One last comment before we start, which is that it's important to stay on topic, because we have a fair amount of ground to cover.

Introduce Group Participants:

Let's go around the table and introduce ourselves. Please state your name, your title and the organization with which you are associated. Also briefly describe the type of self-generation system you had installed under the program, and how long it's been installed and operating. I'll start by saying that I am _____, I am a consultant and I work for Summit Blue Consulting, the consulting firm hired to conduct an in-depth evaluation of the SGIP – this focus group being one piece of the overall evaluation effort. Obviously, we don't have a self-generation system involved here – ! Anyway...(next person & around the table).

A. Program Value Proposition

1. When you first learned about the program, in what ways did it seem important to your business, such that it attracted your attention and got you to participate?
2. How do you see your interests and needs as an electricity customer aligning with the interests and needs of the State for electricity supply? [This includes development by both utilities and others]
3. In hindsight, has what you initially valued about the program changed since you first learned about the program? What's changed and why?
4. Strategically, how might a future program like SGIP best align itself with the needs and interests of customers like yourself? What energy-related issues will be critical to you as a customer that a future program will need to address

B. Eligibility

1. When considering whether to participate in SGIP, did anyone at your business have initial concerns about eligibility for the program? What were those concerns? How were those concerns addressed?
2. In the future, SGIP will see changes in eligibility as cogeneration and non-renewable fuel cells no longer qualify, and solar PV technology is being covered by the new CSI. What do these changes mean to customers like you – how do you think they will affect other prospective host customers?

C. Incentive Structure

1. Did the incentive structure make sense, or did it have quirks that made it confusing to you?
2. How much of a factor was the incentive in the size and timing of the project?
3. Would the system you installed been developed differently (technology, size, timing, etc.) had the incentive NOT been an up-front lump sum offered? (Specifically probe about pay-for-performance alternatives and how they might have influenced the system.)

4. How should incentives be structured in the future – what general sort of incentive structure would make most sense to you? (Specifically probe for up-front lump sum incentives vs. ongoing pay-for-performance incentives that could, over time, exceed what an up-front lump sum would pay.)

D. Marketing and Outreach, Administrative Process

1. How did everyone here learn about the program?
2. What information was most important to you, and in what ways did it influence your decision to participate as a host customer?
3. Did anyone here work with more than one program administrator (PG&E, SCE, SCG or SDREO)? For those who did, were there any marketing and outreach differences between them? What strengths/weaknesses of the different approaches influenced your participation?
4. Once you decided to participate, what role did you (or your organization) have in preparing program application materials and working with the PAs to enroll in the program?
5. For those who were self-applicants, what in the application process was done well by the PAs (such that the application process was efficient) and where could improvements have been made?
6. For those who didn't directly manage the application process, but instead a third party contractor, ESCO or other firm handled the application, what did the third party do well in handling the application on your behalf, and what could have been done better?
7. Have the 'proof of progress' and 'system completion' requirements been reasonable? Where & how might they be improved?
8. Does anyone have any other thoughts about the program's marketing or administrative functions?

E. Self-generation Operations, Customer Support Service

1. Has anyone had any concerns about the verification of their system's operational readiness, including metering issues?
2. Is grid interconnection a major concern in any way? Did everyone's grid interconnection go as expected, including net metering where installed?
3. Has everyone's system's reliability been as expected so far? What has affected reliability so far? What do you see affecting reliability over time?
4. Aside from basic reliability, what other concerns exist in your mind, such as production costs or electricity prices, that might result in their system's electricity output going down over time?

5. What concerns exist that might result in the system being shut down altogether, and perhaps removed at some point? What would trigger this scenario?
6. What operational and maintenance support have people needed for their system so far? For those who have needed it, what's the experience been – good, bad or what? Please describe your experiences.

F. Self-Generation Technology and Fit with End-users

1. Has the system been a good technical fit with your facility? How so, or not?
2. Has the system been a good fit in other, non-technical ways, including financial, organizational, or cultural? How so, or not?
3. How could the program better help fit self-generation technologies with end-use customers like you?

G. Perspective of Other Energy Programs

1. There are many different energy resource programs in California that promote renewable energy supply, energy efficiency, demand response or load management. How do you see SGIP fitting in with other energy programs – what programs are most important to you as an end-use customer?
2. Where does SGIP sit in your sense of priorities as a prospective participant in all the available programs – is it high up on the list, somewhere in the middle, or? Why?

H. Overarching Issues: Legislation and Regulatory Developments, Regional or Other Differences in Markets That Affect Programs

1. Has anyone experienced any influences on their participation due to energy-related legislative and regulatory developments that affect eligibility, incentives, or other DG programs? How have those influenced participation – type of system installed, its size, timing or other factor?
2. Has anyone experienced regional or other differences in markets that have had some affect on participation, such as differences in air emissions regulations or construction and operating permitting? How have those influenced participation – again, the type of system installed, its size, timing or other factor?
3. Let's briefly touch on ownership – who here actually owns their system and who leases it or has some other ownership arrangement?
4. For owners, what's been good about owning your own system, and what don't you like about owning it yourself? What made you decide you wanted to own it?
5. For non-owners, what's been good about not owning your own system, and what don't you like about not owning it your self? What made you decide that you would not be the owner? (If their only option, per the way the third-party developer/owner sold the system to the host customer, was that the third party would own it, ask: so you really had no ownership choice, right? How did you feel about not having that choice?)

I. Future Program Possibilities

1. I'd like to explore a few ideas about the future of SGIP or programs like it that promote distributed generation located at customer sites. Fundamentally, do you see SGIP or similar programs being a widely developed, mainstream part of the overall system of electricity supply? Or mainly specialty or niche-type programs that have a limited market? Why?
2. From your perspective as a customer, what barriers stand in the way of making SGIP a widely developed, mainstream contributor to electricity supply? (Probe: economic barriers, technical barriers, social or cultural barriers?)

Let's discuss your views of what an ideal program might look like:

3. What would be the best way for the program to reach you (marketing and outreach)?
4. What would be the best kinds of information it would provide to you as a host customer? To others such as installation contractors or ESCOs with whom some of you have partnered for a system?
5. How should the energy service industry (equipment manufacturers, installation contractors, energy service companies or others) be involved with project development? Ownership? Operations and maintenance?
6. How would the program facilitate making the system as cost-effective as possible? (including both incentives and financing support, but also ways to reduce the basic cost of systems either through technical improvements, economies of scale or other market developments)
7. From your perspective as a customer, how should such a program be integrated with other energy programs, whether those are other distributed generation development programs, energy efficiency programs or demand-response or load management programs?

J. Close

1. I want to thank you for a productive, informative discussion. In closing, does anyone have any last thoughts to sum up their experience with the program? (Especially ask those who haven't had much to say so far.)

**APPENDIX B:
EVALUATION CRITERIA REVIEW AND REFINEMENT
SUMMARY FINDINGS**

Table B-1. Evaluation Criteria Review and Refinement – Summary Findings

Evaluation Criteria		Planning & Design	Marketing & Outreach	Administration & Management	Tech Support & Other	Consolidate With Other Criteria?	Consider Eliminating?	Comments: Consolidations, eliminations and additions; Refinements to improve specificity, measurability, actionability, realism and time-bounding
Criteria for Meeting Goals								
1	C1.A Increased customer awareness of available distributed generation technology and incentive programs	X	X		X	Incorporate #11, 13 & 14	No	Consolidate all education & awareness criteria. Incorporate #13 small-customer marketing emphasis phrasing. Specify realistic, actionable target awareness levels by technology, and key outcomes expected of the effort (e.g., XX,XXX small consumers are provided program brochures or other information; also, expected increase in awareness levels, etc.)
2	C1.B Fully subscribed participation in program (i.e., total installed capacity, number of participants)		X	X	X	No	No	Is fully subscribed participation realistic - or is participation goal perhaps too low?
3	C1.C Participants' demand for grid power during peak demand periods is reduced	X			X	No	No	Specify realistic, actionable peak demand reduction target and schedule

Evaluation Criteria		Planning & Design	Marketing & Outreach	Administration & Management	Tech Support & Other	Consolidate With Other Criteria?	Consider Eliminating?	Comments: Consolidations, eliminations and additions; Refinements to improve specificity, measurability, actionability, realism and time-bounding
4	C2.A Development and provision of substantially greater incentive levels (both in terms of \$ per watt and maximum percentage of system cost)	X		X		No	No	Specify target technologies and actionable participation and/or kW impact outcome from higher incentive level; state schedule of incentive development
5	C2.B Provision of fully adequate lead-times for key program milestones (i.e. 90 day and 12 month)	X		X	X	No	No	Specify target lead times (including both proof of project advancement and completion schedules) according to private vs. public entity rules
6	C3.A Maximum allocation of combined budget allocations for Level 1 and Level 2 technologies			X		No	Replace with #30, #31	Focus should be on full subscription of participants and preferred technologies, not spending budget for its own sake; spending available budget may not be good proxy due to barrier & other costs
7	C3.B A high percentage of Level 1 and Level 2 projects are successfully installed with sufficient performance			X	X	No	No	Specify actionable percentage and target schedule, and specify that "sufficient performance" is per emission & efficiency rules

Evaluation Criteria		Planning & Design	Marketing & Outreach	Administration & Management	Tech Support & Other	Consolidate With Other Criteria?	Consider Eliminating?	Comments: Consolidations, eliminations and additions; Refinements to improve specificity, measurability, actionability, realism and time-bounding
8	C4.A Demonstration of customer delivery channels for program participation to include distributed generation service providers and existing utility C-I customers networks	X	X		X	No	No	Simplify phrasing to better focus on main point: use existing provider/customer networks. Specify nature of expected networking utilization and state in realistic, actionable terms including utilization metrics and schedule.
9	C5.A Demonstrate that the combined Incentive level subscription, on an overall statewide program basis (i.e. the participant mix of Levels 1, 2, and 3 across service areas), provides an inherent generation value to the electricity system (avoided generation, capacity and T&D support benefits).	X				No	No	Simplify phrasing to focus on main point of assuring net-positive electric system overall program cost-effectiveness. Specify a realistic, actionable expected net benefit target and measurement procedure. Specify schedule
10	C6.A Quantifiable program impact on market development needs of the energy services industry	X	X		X	No	No	Specify realistic types and quantities of impact (e.g. X# more providers establish SGIP-related business lines), metrics and target schedule

Evaluation Criteria		Planning & Design	Marketing & Outreach	Administration & Management	Tech Support & Other	Consolidate With Other Criteria?	Consider Eliminating?	Comments: Consolidations, eliminations and additions; Refinements to improve specificity, measurability, actionability, realism and time-bounding
11	C6.B Demonstrated consumer education and program marketing support as needed	X	X		X	Incorporate with #1	No	Consolidate with #1
12	C6.C Tracking of energy services industry market activity and participation in the program	X	X	X	X	No	No	Specify "activity" and "participation" in measurable terms, then specify metrics for measuring activity and participation. State target levels of activities and participation, including schedule for attaining target levels
13	C7.A Ensure that program delivery channels include communications, marketing and administration of the program, providing outreach support to small consumers	X	X		X	Incorporate with #1	Yes	Except for small-consumer segment emphasis, criterion appears to duplicate #1
14	C8.A Use existing consumer awareness and interact with other consumer education/marketing support related to past energy issues to market the program benefits.					Incorporate with #1	Yes	Main point appears to be to emphasize cross-marketing tactics to build awareness & interest. Incorporating "cross-marketing" phrasing in #1 should enable this criterion to be combined with #1

Evaluation Criteria		Planning & Design	Marketing & Outreach	Administration & Management	Tech Support & Other	Consolidate With Other Criteria?	Consider Eliminating?	Comments: Consolidations, eliminations and additions; Refinements to improve specificity, measurability, actionability, realism and time-bounding
Administrator Effectiveness Criteria								
16	Administrative cost per number of applications and per unit of installed capacity			X		No	No	More appropriate than the #17 overall budget % criterion because #16 retains cost discipline while providing greater program management flexibility
17	Administrative cost as a percent of overall program budget			X		No	Yes	Effectively duplicates #16 and is prone to arbitrary cap specification (irrespective of impact/participation results)
18	Penetration rate	X	X			Incorporate #19	No	Specify realistic, actionable target penetration rate and schedule; expand phrasing to encompass project growth metrics
19	Growth rate of projects over time		X	X	X	Incorporate with #18	Yes	#18 and #19 both reflect marketing effectiveness and measures of those use same data
20	Customer satisfaction ratings	X	X	X	X	No	No	Specify realistic, actionable target satisfaction ratings and schedule for attaining higher ratings
21	Supplier satisfaction ratings	X	X	X	X	No	No	Specify realistic, actionable target satisfaction ratings and schedule for attaining higher ratings
22	Average response times to program submittals and inquiries	X	X	X	X	No	No	Specify realistic response times and schedule for ongoing improvements

Evaluation Criteria		Planning & Design	Marketing & Outreach	Administration & Management	Tech Support & Other	Consolidate With Other Criteria?	Consider Eliminating?	Comments: Consolidations, eliminations and additions; Refinements to improve specificity, measurability, actionability, realism and time-bounding
Organization Alignment Criteria								
23	Organizational structure	X	X	X	X	No	Yes	2003 PA Assessment report p.4-2 provides qualitative examples. Unsure if this is a measurable criterion so consider dropping it. If retained, however, specify key structural characteristics affecting program administration success, then identify associated metrics and schedule
24	Alignment of the goals of the administrative organization with public policies	X		X		No	No	Specify nature of the preferred alignment, identify reasonable metrics and measurement schedule
25	Conflict of interest	X		X		No	Yes	Duplicates #24 on organizational alignment
26	Fiscal responsibility including accountability and legitimacy			X		No	Yes	Criterion's purpose unclear. Previous research found little to address in this area.
27	Influence of regulation			X		No	No	Specify nature of regulatory influence, identify reasonable metrics for addressing effects on performance
28	Technical and administrative expertise	X		X	X	No	No	Specify nature of desired expertise, identify reasonable metrics for addressing performance effects

Evaluation Criteria		Planning & Design	Marketing & Outreach	Administration & Management	Tech Support & Other	Consolidate With Other Criteria?	Consider Eliminating?	Comments: Consolidations, eliminations and additions; Refinements to improve specificity, measurability, actionability, realism and time-bounding
29	Support for M&E activities	X	X	X	X	No	No	Specify nature and level of expected support per CA Evaluation Framework; identify reasonable metrics and measurement schedule
Additional or Alternative Criteria								
30	Program support labor focused XX% (e.g., 80%) on eligible renewable technologies		X		X	No	No	Consider replacing #6 with this and #31
31	XX% (e.g., 60%) of participant applications are for Level 1 and 2 renewable technologies		X		X	No	No	Consider replacing #6 with this and #30

Recommendations for Effectiveness Criteria:

1. Consolidate the various education and awareness criteria now spread across items 1, 11, 13 and 14.
2. Replace item 6 in Table X-4, regarding budget allocations, with items 30 and 31 or equivalent criteria.
3. Eliminate item 17 regarding administrative cost budget percentage, and focus on item 16 as the key metric for administrative efficiency.
4. Consolidate the penetration and project growth rate criteria, integrating their respective performance data.
5. Eliminate item 23 on organizational structure due to its low value and difficult measurability.
6. Eliminate item 25 on conflict of interest as it duplicates item 24 on organizational alignment.
7. Eliminate item 26 on fiscal responsibility as its purpose is unclear and past evaluation work found nothing actionable about it.

The SGIP WG should revisit these goals using the suggestions made here as a starting point.

APPENDIX C:
PROGRAM DESIGN BEST PRACTICES

I. Introduction

The evaluation team reviewed a selected set of “best-practice” literature in support of the broader program evaluation effort. The review focused on recent work specific to demand- and supply-side energy programs. This summary reports the findings of the review and key lessons that relate to the Self-Generation Incentive Program and similar programs.

The evaluation team reviewed 14 sources of information that either specifically focus on energy program best practices, or provide insights about what constitutes best practices in energy programs, with an eye toward self-generation applications. In turn, the sources reviewed themselves drew upon a wide variety of knowledge from the general business management literature, as well as experience directly gained from energy programs since the early 1990s. The materials reviewed are listed in a bibliography following the summary.

A number of important observations were made that can inform both the evaluation process and future implementation of the SGIP and programs like it. These observations are incorporated in the summary discussion, which is organized by the following programmatic functions:

- Planning and Design
- Marketing, Sales & Outreach
- Financial Incentives
- Operations and Administration
- General Management
- Technical Support and Other Functions Related to Self-Generation.

II. Review Summary

A program functional approach is taken in this summary because the functions tend to be relatively stable regardless of the form taken by the program: self-administered vs. outsourced to third parties, variations in marketing strategy and incentive designs, and the numerous other variations possible in energy programs. The Summary begins by considering the planning and design work done to develop a program. Continuing along, the marketing, sales and outreach function is considered, which involves disseminating information to the market to build awareness and help prospective participants decide to participate. Incentives are considered next. Administrative aspects – focusing primarily on “back-office” functionalities that follow through on participation recruitment to process applications, gather participation data, etc., are covered next. The overall management perspective is then addressed to consider how all the other functions get orchestrated and overseen. Lastly, certain other functions that do not fit cleanly in the other categories, including considerations specific to self-generation programs, are addressed.

The summary is a synthesis of the various best-practice references cited in the bibliography, with additional insights from the evaluation team’s experience with all aspects of energy program functions over the past thirty years.

A. Planning and Design

1. Market and technical research is actively conducted to establish program potentials, gain knowledge from other industry players, and evaluate program experience.

Gauging the program market from a variety of perspectives is important to do during the program planning and design process. The research needs to address market potential for the contemplated design (numbers, impacts, costs and benefits), and provide a sufficiently deep understanding of participant decision making in relation to information and incentives the program will offer. It is also an essential part of the middle and end stages of the program life cycle, to enable mid-life program changes and trigger the program's exit strategy. Best practice market research is active, ongoing and focused on the life-cycle needs of a program.

Market and technical research should be funded based on existing market intelligence and technical knowledge previously gained, by the program's market potential, and by its technical complexity. More initial market intelligence and in-house technical knowledge may suggest less initial research is needed, though that may not remain so as the program evolves; indeed, market and technical research efforts may need to be significantly increased if ongoing monitoring of the target market indicates deficiencies of initial intelligence.

Greater market potential, whether in numbers of participants or costs and benefits, generally justifies greater research efforts. Lesser technical knowledge suggests greater technical research efforts will be needed to ensure the program's preferred technologies are able to best fit in with market infrastructures.

2. A "stage-gate" or similarly formal program development process is utilized both to develop the program and evolve it throughout its life cycle, including pilot tests and market experiments, with metrics and milestones clearly defined, best practices incorporated and evaluation integrated.

However named, the development process needs to be formal and should follow a progressive set of "go/no-go" decisions based on the results of each program development step. This progression of decisions provides a clear road map for moving ideas through a critical path of development steps to the program's launch. It provides the following benefits:

- Accelerates speed-to-market
- Increases likelihood of product success
- Introduces discipline into an ordinarily chaotic process
- Reduces re-work and other forms of waste
- Improves focus via gates where poor projects are killed
- Achieves efficient and effective allocation of scarce resources
- Ensures a complete process – no critical steps are omitted

Along the way, such a development process will focus needed market and technical research, including searching for and incorporating experience gained in similar programs elsewhere. It will produce clearly defined and measurable metrics or program logics, and will integrate evaluation elements so that important program knowledge and information is retained to assess whether the program succeeds or not, and how it has done so.

3. Proactive involvement of key internal and external stakeholders is emphasized early in the planning process.

Vetting the program concept with key stakeholders is critical to achieve understanding of the program by those whose influence can make the difference between program success and program failure. This needs to be done as part of the development process, and needs to be iterative as development proceeds and the program designs change. It should continue throughout the program's life cycle.

Stakeholder involvement ensures a rational dialogue among active and prospective participants in the program, providing an opportunity to educate naïve stakeholders and gain their respect, as well as provide a forum for meaningful input when program design concepts are being considered.

Internal stakeholders often are just as important as external stakeholders in program planning and design. Internal parts of the organization (marketing communications, information systems, pricing, etc.) need sufficient lead time to plan their contributions – so that their resources are available to adequately support the program and so that reworking internal support systems and processes is minimized as the program rolls out and evolves throughout its life cycle.

4. Formal, functionally comprehensive program plans established in alignment with strategic and policy priorities, and explicitly link objectives and strategies to tactics.

Formal program plans are necessary to organize and communicate the program effort. They provide the basis for measuring performance and establish accountabilities. They need to be functionally comprehensive so that all supporting organizational functions and resources are aligned and can see how they contribute to the program's overall operations.

5. Plans are kept updated & adapted to changing market conditions, and are widely communicated (including evaluation feedback).

Program plans need to be adapted and updated as operational realities take over, rather than allowing problems and opportunities to drive the subsequent evolution of the program in an ad hoc manner. This can easily result in the program drifting aimlessly and limit its chances of succeeding.

Programs developed using a formal planning process should anticipate most operational problems and opportunities, and establish techniques to manage those as they arise. Where the program plan is kept active and is regularly revisited in light of market realities that have arisen there is a far better chance of being able to make effective, mid-course tactical corrections. Regular communication of the plan across an appropriately wide audience of stakeholders is critical to maintaining stakeholders' engagement, to minimize unpleasant surprises, and to maximize stakeholder feedback.

6. Program technologies, products and services are aligned with the organization's strategic priorities.

The program development process should include a step whereby alignment with the organization's strategic priorities is worked out and assured for some defined time frame.

7. Program plans and commitments are aligned with its associated product and service life cycles, and cover at least one program life cycle.

Programs should explicitly recognize the life-cycle costs and benefits of technologies, products and services associated with them. Customers expect support throughout the life of the technologies the program is promoting. Developers and vendors expect the programs to support their product/service needs with consistent and clearly communicated rules and program processes during the time those products or services are being offered to end-use customers. Mid-course program changes that minimize disruptions to technical, logistic and knowledge requirements will be far more successful than changes that ignore those realities.

8. Program branding is utilized to establish clear identity, and simplify and integrate marketing communications.

Branding done well brings a program a strong identity in the market to both participating vendors and end-use customers. Well-designed programs quickly bring customers and other market actors beyond the initial impression that a strong brand provides through subsequent education and technical support. Not surprisingly, this subsequent support, when done well, will reinforce the brand identity, creating a positive feedback loop that can pay dividends through word-of-mouth advertising by satisfied customers and trades.

9. Active internal and external organizational and resource coordination is undertaken and maintained throughout the program life cycle, including program administrators with same or similar offering.

During program design, to the extent it has common elements with other similar programs, efforts should be undertaken to coordinate program resources with those other programs and organizations. Working groups, individual liaison efforts, information systems integration and coordination, co-marketing efforts and evaluation work all can and should be established across programs where practicable. Maintaining such coordination throughout the program life cycle becomes more feasible if it is planned during program design.

B. Marketing, Sales and Outreach

10. Marketing promotion and sales plans and calendars are established and actively managed, covering all tactics used.

Promotion and sales plans are an inherent component of program implementation. They operationalize the program plan by showing the types and frequency of actions the program is taking in the marketplace to inform customers and supporting trades. Further, they personalize program responsibilities to the staff involved so that staff performance can be objectively evaluated.

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.

11. A single point of contact for program marketing is established and communicated. This applies to field sales as well as central marketing organizations. Customers, trades and other stakeholders do not have the time to sort out which people they should be talking to

when they have a question or otherwise need program support. Programs with clearly identified points of contact reduce confusion and have higher credibility with stakeholders. Additionally, single points of contact enable integration of problem solutions.

12. Marketing collateral is fully developed, consistent across collateral types, and is tailored to target market uptake preferences.

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 as well 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. Thus, a progression of collateral ranging from initial, simple awareness-building information through relatively technical decision-support material is needed so that prospective and active participants remain educated about the program and have access to increasingly specific information to support their decision making processes.

13. Promotions appropriately communicate both energy and non-energy benefits - but do not oversell the program's benefits.

Program promotional information should address the full range of value propositions which the program offers to participants. Best-practice promotions highlight non-energy program benefits without exaggerating or overselling those benefits. The alienation that can occur from overselling program benefits can have significant credibility consequences as customers who become dissatisfied share their disappointment about how the program didn't meet the expectations it had seemingly promised.

This issue applies particularly to direct marketing done through personal contacts, where it is important to have field staff and trade allies who are properly trained to exercise restraint in selling the program to customers.

14. Marketing channels are used selectively in relation to target market preferences

Program budgets go further and information dissemination is more effective if marketing communications are properly targeted. Appropriate marketing channels reinforce the messages that are presented to its audience. For example, trade association channels should be used in a complementary manner with individual customer and trade ally communication channels. Trade association channels can be used to develop broad industry awareness while individual customer and trade ally channels bring more personalized information to bear.

15. Marketing and field sales are targeted at key market segments and decision makers in a coordinated manner.

Program budgets are made more effective at achieving program goals by targeting the right market segments with the appropriate messages. Coordinating the types of information and branding messages disseminated by the program to different market actors should address the varying needs of different segments in the value chain. Facility managers need different program information than their management and financial staff, which in turn is quite different than the information needs of end-use customers.

Market preferences and dynamics change over time due to both program impacts and external influences. Strong program plans will anticipate market changes and uncertainties by providing mechanisms for identifying and managing opportunities and problems that arise over the course of the program life cycle. To the extent such situations show a pattern, the program development process should be enabled to quickly diagnose appropriate management solutions and take appropriate actions.

16. Proactive follow-up is undertaken with customers and other market actors needing decision support.

Program information that is communicated to the market needs to be supported by targeted follow-up strategies. Broad marketing and outreach efforts can touch many market segments and interested stakeholders but often cannot address all of their specific questions or unique concerns. Pro-actively contacting important market actors supplements broad outreach efforts to engage the market more deeply.

17. Field sales and outreach experience is actively fed back to drive program evolution.

Perhaps the best evaluative resource for a program, especially in its initial phases, is the people in the field who directly interact with end-use customers and other market actors. Account managers, customer service agents, and program staff perform critical functions in obtaining feedback from program participants in real time. These communication channels should be complemented by ongoing evaluative research that gathers additional market intelligence for the program from various other perspectives.

18. Proactive, collaborative communication is performed with key interest groups & individuals, especially thought leaders.

This strategy refers to market actors outside of the program's formal marketing and sales efforts, specifically individuals with high profiles in the public, such as political leaders or public advocates. These community leaders can lend further credibility to the program by their endorsement of the program. These market actors often carry a lot of credibility in the public eye and can help the program reach wider audiences.

19. Recognition events are held for customers, trades and other key market actors.

Recognition events and public ceremonies help cement the program's value propositions by providing positive publicity for program achievements and participants. The public recognition, and associated media coverage and press releases that supplement it, can strengthen the visibility of the program to market actors currently participating in the program or contemplating participation.

20. Active liaison and co-marketing is undertaken with key trades and other organizations.

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.

21. Conduct regular trade & customer education & training events, including participation in selected trade shows.

Program experience has shown that markets responds very favorably to participant-oriented educational events and public forums. Presenting at trade shows is an important vehicle for communicating the value propositions of the program to groups of interested stakeholders in their events.

22. Project leads are actively cultivated and subsequent participation development is expedited to avoid losing customer interest.

Providing program support services in a timely manner is very important for program continuity and participant satisfaction. Whether that is financial analysis support, technical information, or reinforcing case study information, timely provision of the needed decision support is critical to keep program momentum. Oftentimes customers or participating trades themselves are the source of delays in the decision process, which presents the program a special challenge to diplomatically intervene and keep the decision process moving forward. This type of proactive support can demonstrate greater program value and actually gain participants who otherwise might not decide to participate.

C. Financial Incentives

23. Incentives are optimized relative to target technology costs and program cost-effectiveness.

The program planning and design process, if effectively done, will try to identify the optimal level and forms of incentives through market research and direct experimentation via pilot offerings employing varying forms and levels of incentives. To the extent a parallel experimental approach is not feasible (because of geographic or other constraints), a serial approach to incentive optimization should be employed whereby the program is fielded to a small audience and reactions to the incentives quickly fed back to program development staff, who then adjust the incentives and reiterate the test. This may delay the program's full-scale launch, but the delay may be justified if it can successfully optimize the incentive values.

24. Incentives are regularly reviewed and adjusted in light of technology cost developments.

Incentive levels often need to be adjusted or changed in the course of implementing a program. In many cases incentive levels need to be set higher initially and then restructured downward over time. One such situation is where the program is supporting emerging or unfamiliar technologies whose costs are expected to decrease over time as they gain market acceptance. Here, incentives logically can be greater at first, then decline as the markets mature and as technology costs go down. Setting the incentive levels at the right value is a critical aspect of program implementation and regular review of incentive levels is critical.

25. Incentives (including financing options) are designed to fit recipients' financial decision structures.

Early market research should establish the most appropriate form of incentive in relation to how customers make financial decisions. As noted above, this may change over time depending on the technology involved, the purchasing behaviors of different customer segments, the distribution and sales dynamics, etc. The program's ongoing evaluation efforts need to explicitly seek feedback about how well the incentives are meshing with recipients' financial decision-making structures, and the program incentives may need to be modified if there is a significant disconnects being experienced.

Financing is an option that some programs offer. Best-practice programs recognize that cash flow-neutral financing (i.e., paid off by savings so that the energy bill is neutralized), particularly for medium-sized and smaller customers, can have a synergistic effect on the decision to participate. If the program economics allow, financing as a complement (not a replacement) to other incentives should be considered, particularly if a lending bank can be recruited to provide the financing services and the payments can be set up so that bill savings can provide the cash flow for payments.

26. Timely disbursement of incentives is done to maximize recipient satisfaction.

Incentive disbursements are an extremely important component of program success. Some technologies being promoted by programs are expensive and, to the extent program incentives have a meaningful impact on cost or cash flow, their timely disbursement can make a difference to participants' financial situation. The program has an opportunity to demonstrate its credibility with recipients by disbursing incentive payouts in a timely fashion.

D. Administration

27. Clearly defined administrative processes are developed and documented, including quality assurance.

This practice helps ensure that administrative processes are rationalized for high productivity. It also facilitates process evaluations and associated diagnosis of administrative problems and their resolution.

Quality assurance should be an explicit part of the administrative process, reaching throughout the elements of program administration. Because administrative processes are almost entirely within the control of the program administrator, there should be few reasons not to include quality assurance in administrative element.

28. Application and other program information forms are kept simple and vetted with users to ensure ease of use.

Forms and paperwork often are the first set of information participants encounter once they decide to participate in a program. When filling out application forms, participants are doing some work to provide information for an uncertain result. Often the information being requested is proprietary or confidential data. Programs often experience inordinate participation delays because the "paperwork" is too complex, or the information being required is not readily known or available, requiring extra levels of effort to prepare it.

This difficult situation can be mitigated by actively minimizing the amount of information needed by the program overall, by spreading it out over time (obtain general data first, to initially qualify the participant, for example, and ask for more technical data as the customer proceeds through internal decision making), and by structuring the data required to best match how those providing it are able to submit it. This may suggest a vetting process whereby, in the planning stages of the program, prospective participants and other market actors (particularly trades who often fill out forms on behalf of their customers) are asked for their input on the type and form of information needed for the program to succeed.

29. Application and other information requirements are processed rapidly, including participant interaction.

Similar to timely disbursement of incentives, timely processing of program intake information demonstrates a quality approach to participants, helping to gain their respect and subsequent cooperation with the program. Allowing applications to sit in a long waiting list leaves participants confused as to the status of their application. Timeliness in this regard is critical for program continuity and success.

30. Problem management and escalation procedures are defined and operational, including noncompliance adjudication.

No program exists without encountering administrative problems. These range from simple missing information to full-scale fraud. A program needs to have an adjudication process in place, that is defined during program planning, that anticipates such problems and has a reasonable method for addressing them. The scale of such problems suggests a tiered approach to handling them, ranging from a procedure for ensuring complete program applications, which can be handled by administrative staff, to a high-level management review and disposition process for large-scale challenges, such as when a project of high value exceeds program incentive caps.

31. Information systems covering all administrative aspects including EM&V support are integrated and automated for best productivity and decision facilitation.

Many programs' day-to-day operations suffer from inadequate information systems integration. As part of the program planning and development process, information requirements need to be explicitly documented and a process of reviewing all applicable systems (including paper files) undertaken to assure that data can be pulled from where they are stored, compiled and integrated with other needed data, and done so with a minimum of manual intervention.

The benefits are not only to minimizing program administrative costs by maximizing data automation, but also because applications and other intake forms can be processed more quickly for customer satisfaction, and program reports can be more quickly produced to facilitate program management decisions.

32. Program reports are aligned with plans, goals, oversight and evaluation needs.

Information reports produced in the course of the program's implementation should be neither excessive nor inadequate. Reports developed for program management, regulatory oversight and other uses should be designed during the program planning and development process, including a value assessment to specifically determine how the reports' information will be used. To the extent there is superfluous information being gathered, such information requests need to be excised. If information reports are proving to be deficient, steps should be taken to add the necessary data elements into the reports. Over time, the program's administrative processes should actively seek to optimize the amount of information needed to effectively manage the program. Too much data will dilute the value of the important information and create ongoing reporting burdens for those producing reports and those who must read them.

E. Management

33. Defined and strategically aligned staff organization with clear lines of authority, priorities and accountabilities.

For utilities especially, energy programs and their staffing frequently have been stepchildren in the organization and its business strategies, with program functions dispersed in a number of areas such as corporate planning, customer service, rates, communications, field area operations, etc. This dispersed organization requires extensive cooperation of upper management and the diligence of staff assigned in the various areas to pull together and make the program work. But this approach suffers from the bureaucratic “silo effect,” whereby lines of authority are spread across the organization, and the internal priorities of the various areas are often focused on other matters. The resulting arrangement can hinder the program’s efforts to efficiently marshal resources and apply them effectively to manage the program.

Best practice management will directly address both strategic and organizational alignment to ensure that energy programs are effectively organized to enable them to cohesively contribute to the business strategy of the organization. For third-party program administrators this may be less of an issue because such organizations have a more single-minded purpose oriented around energy program administration. For utilities, energy programs can readily align with the strategic priorities of the broader organization by explicitly linking them to customer service enhancement.

Energy programs fundamentally rely on marketing and sales functions and should be organized around those functions with program management leading from that point position. Programs depend on marketing and sales to build and maintain their customer base. Most operational functions associated with energy programs are managed by market actors, external customers and energy service providers. Programs should be organized around their marketing and sales functions, and program management should lead from a marketing point position.

34. Capable personnel are hired anticipatively, and in sufficient numbers to do the job.

This practice seems obvious on its face and perhaps goes without saying. However, building and maintaining a capable staff of sufficient numbers is difficult for a variety of reasons. These constraints include head count policies that prevent needed staff additions, requiring a progression of entry level to senior staff that enables organic growth of skills and development of future leadership. Another constraint is the inability to anticipatively seek people with the needed skills (which may run counter to a head-count policy), but instead reactively hire applicants who show up during a candidate search after an experienced person leaves the job.

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 allowed, almost regardless of what a head-count policy would otherwise dictate.

35. Program leadership is actively exercised at multiple levels inside and outside the organization.

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 other 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. It also requires various internal liaison work through informational presentations to other areas in the

organization, so that those areas are kept abreast of program changes and how they are beneficial. Staff leadership is personified by frequent, productivity-oriented interaction with other areas providing support services to the program.

36. 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. It particularly includes talking "down" in the organization – literally managing by walking around and spending significant time interacting directly with staff at all levels within the organization. Program funding is aligned with goals, stable and sufficient to do the job.

Program funding, like staffing, requires strategic alignment with the overall business portfolio and goals of the organization. This is important for managing performance expectations of the program as well as managing the organization's priorities for program support. Knowing why the program budget is set at certain levels, in light of other budget priorities, provides important direction to the organization.

Larger program goals generally require greater funding to be implemented, it is important to understand and communicate what amount of funding is sufficient to do the job, while actively trying to seek ways to reduce costs without sacrificing program services. Program economics should drive funding decisions, understanding that in many organizations the strategy of setting arbitrary budget caps or even reductions are often used to challenge staff to find ways to reduce costs.

Perhaps equally important to sufficient funding is funding stability. This is a key reason for planning programs for a full life cycle. It also provides a major signal to the market that the program will be active long enough to make it worth stocking appropriate technologies (for trades) and for developing the case for investing in the technology (for customers who often require multi-year periods to plan, budget, build and operate the associated equipment).

37. Program staff are thoroughly and regularly trained.

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. An active staff training element in programs is also an attraction to prospective staff, and helps ensure that people's knowledge enables them to effectively handle their job duties.

38. Program goals, including associated evaluation objectives, are specific, measurable, actionable, realistic and time-bounded (i.e., "S.M.A.R.T.").

The adage that "one cannot manage something if one cannot measure it" applies to energy programs just as much as any other business venture. Best-practice programs don't need to have a lot of goals and objectives, and indeed should not, because a plethora of goals can be confusing to staff and program participants. But the goals and objectives that are set forth in best-practice programs have certain characteristics that enable reasonably objective performance review. These characteristics, defined in various ways in the organizational development literature but often stated in the form of the S.M.A.R.T. acronym, are critical to define in order to establish performance accountabilities.

39. Program managers have the necessary organizational latitude to marshal support resources.

Regardless of how the program organization is defined, it is important to provide the program manager with sufficient latitude to coordinate the organization's resources to manage the program. This point mirrors accountability: if program managers are responsible for program performance, they need to have sufficient operational authority to allow them to succeed with the program. This balance of accountability and authority has to be supported by upper management as part of its leadership responsibilities.

40. Program staff & organization performance are actively managed and frequently reviewed, with performance goals linked to pay.

This is part of the overall leadership milieu. The key aspects of this practice are frequent, formal performance reviews and direct linkage to pay. Having well-specified goals and objectives, as discussed above, is an important complement to this practice, so that staff and management both have a common basis for reviewing performance.

41. Budgets and cost-effectiveness are frequently reviewed and functionally adjusted to address problems proactively.

Financial management is another key practice that is facilitated in best-practice situations through regular (e.g., monthly) budget reviews, timely diagnostic investigations into budget deviations and subsequent adjustments to address the developments that are causing the deviations. These reviews should be undertaken in conjunction with cost-effectiveness updates to provide a broader perspective on what the budget dynamics mean to the program's performance.

Budget caps are often put on energy programs, and are usually intended to avoid undue run-ups in costs that may drive up energy prices (through which program costs are recovered), as well as to avoid excessive free ridership in the program. Best-practice programs will consider the dampening effect such caps put upon the program achieving a high market saturation by investigating whether the run on the program that is causing the cap to be reached is a real opportunity to go beyond the program's performance goals, or whether in fact there is a justifiable reason to manage the program under the cap. Management should specifically address whether such budget-management tactics as wait-listing will deter long-term market transformation and cause customer or trade dissatisfaction, such that the long-term market for the program is hindered.

42. Proactive regulatory liaison is established and maintained.

This is yet another aspect of program leadership, and it becomes a best practice when such liaisons are highly proactive so that regulatory developments do not come as a surprise, and so that regulatory oversight is more mutual than unidirectional. Much of the liaison effort is educational, too, as regulatory organizations often are understaffed and may not have expertise in the program.

F. Other – Self Generation Related

43. Technical support is readily available and adequately tooled to manage program technical requirements.

Because self-generation is a very technical subject, it needs concomitant technical support, whether provided natively by the program or through one or more qualified technical support agents. Self-generation developers seeking to sell their generation systems generally consider themselves as being such experts. Because customers are wary of self-promoting developers, however, the best-practice program will retain independent technical expertise to provide neutral advice both to the program and end customers.

The technical support needs to be supported with appropriate technical analysis tools, both hardware such as metering and other test equipment, and software such as system engineering and financial analysis software. The best-practice program will have such tooling set up within a technical service framework. The services being rendered should incorporate a fee to help cover the service costs, but the fees should be set relatively modestly as a cost-sharing approach that is partially subsidized because it recognizes the underlying value such service provides to the program's success. But modest service fees (perhaps capped at some percentage of the actual cost of the service) also focus attention on assuring good service value is provided. The actual fee level needs to be optimized so that it is not so high that it deters needed applications for the service, yet is not so heavily subsidized as to become a major program budget problem.

44. Equipment selection and purchasing support is offered or facilitated.

As noted above, developers will naturally be biased toward their own products and services. Decades worth of market research have shown that most customers value having a neutral energy advisor which they ascribe as being a valid role for utilities. Whether played by the utility or by some outsourcing arrangement played by third party service agents, good programs will support customer decisions by providing a framework and analysis process for screening equipment and facilitating.

45. Maintenance, repair and operations (MRO) services are either directly offered or facilitated through third parties and inspections.

Developers will generally handle much of this need as part of their contract with a host customer. The program still needs to be engaged, however, in this aftermarket process, because if systems do not work as promised the program's future will be jeopardized. Aside from directly offering such services if end customers so request and are willing to pay for them, the facilitation of such services can be in the form of spot inspections of the services being provided by third-party developers. The technical expertise employed in such inspections has to be of top quality and widely respected, so that when problems are discovered they are not seen as resulting from a non-credible inspection.

46. Communications and control for eligible systems are designed and operated to maintain actionable audit and diagnostic trails.

In addition to the core power production control functions of SCADA (supervisory control and data acquisition) systems, SCADA's ability to provide diagnostic information is extremely important to both assure that capacity is maintained at nameplate ratings and to troubleshoot problems with the generating and associated ancillary equipment. This is related to the

administrative best practice of having integrated information systems and, while a standard SCADA protocol is unlikely to be possible because of how generation equipment controls are manufactured, good programs will, at some level, identify critical audit and diagnostic data that should be required of every control system. System eligibility rules should explicitly define those data requirements.

Also, the less a self-generation system is to be used; the more likely it is to fail when needed. Thus, the SCADA systems need to be regularly exercised to both test the equipment and also ensure that the control systems are able to produce the necessary audit and diagnostic data during periods of actual power production.

47. Grid integration and operating requirements are standardized, and eligible equipment must meet the standards.

Upstream, interconnection standards and system operating requirements (e.g., that ensure safety) must be clearly defined and effectively communicated, including appropriate inspections of all systems installed. Standardized requirements may result in some systems not being eligible, but safety and other operating concerns should override the concern that some systems will be discriminated against.

California's "Rule 21" is an example of clearly specifying such requirements.

48. Distributed systems dispatch procedures are fully defined and regularly tested in synch with overall grid dispatch.

The historical paradigm of electric transmission and distribution system central dispatch is rapidly being challenged by the advent of increasingly large numbers of small-scale distributed generation systems. It will likely take many years to evolve fully automated dispatch algorithms and controls that reliably integrate the output of masses of distributed generators in a new T&D paradigm. In the meantime, self-generation and other distributed generation systems that are centrally dispatched still need specific procedures under which end customers or their energy service agents who operate the systems can operate. Also, whether for grid buy-back or net-metering purposes, there needs to be specific procedures for how distributed systems' production will be handled by the grid.

49. Remotely dispatched systems are grid-tested frequently and deficiencies quickly corrected, including security.

Portland General Electric has a standby generator program that conducts surge tests weekly for 30 minutes. While this practice may seem excessive, it has the benefit of keeping all parties engaged and trained on technical procedures, assures the utility of the actual capacity available from such systems, and increases the safety of the systems and personnel involved. Best-practice programs will conduct such tests on at least a monthly basis.

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APPENDIX D:
TAX IMPLICATIONS

Summary of Financial Incentives Available for SGIP-Funded Projects

A variety of federal, state and utility-based financial incentives have been and continue to be available to improve the economic viability of SGIP-funded projects. While several of the federal incentives have existed in some form for a number of years, the Energy Policy Act of 2005 resulted in the extension and/or modification of most of the incentives. Many of the incentives affected by the Energy Policy Act of 2005 are set to expire on December 31, 2008.¹ Some of the incentives will undoubtedly be renewed beyond this sunset date. However, consistent with the broader history of renewable energy policy, the short-term nature of most federal incentives places a burden on the project development cycle and makes it difficult for DG market actors to plan for the future. Since the majority of federal financial incentives are offered in the form of tax benefits, private projects generally stand to benefit more substantially than do public projects, but opportunities do exist for both classes.

Solar projects in California are unique in their potential to achieve exceptional return on investment due to the ability of project owners to combine federal with state and utility-level incentives. From 2001 through 2005, California offered its own 15 percent solar tax credit.² In addition, a number of California's municipal utilities have offered their own substantial PV rebates. Most notable have been those offered through LADWP and SMUD, as described further below.

Federal Tax Incentives³

The **Business Energy Tax Credit (BETC)** is the simplest federal tax incentive in that it results in a direct lump sum tax credit in the year that an eligible system is installed. The tax credit offsets 30 percent of project capital costs for PV and fuel cell projects, and 10 percent of capital costs for all microturbine projects. While wind is not an eligible technology under the Business Energy Tax Credit, it is eligible under the **Renewable Energy Production Tax Credit (PTC)**. The only other SGIP-eligible technology eligible for the PTC is microturbines operating on renewable fuels.⁴ Since the PTC incentive, 1.9 cents per kilowatt-hour for the first ten years of operation can be so valuable to large-scale projects, wind energy development cycles have closely tracked the expiration and renewal periods of this incentive since it was first enacted in 1992.

¹ The Energy Policy Act of 2005 specified December 31, 2007 as the sunset date for many of the tax incentives. However, these sunset dates were extended to December 31, 2008 under the Tax Relief and Health Care Act of 2006.

² Senate Bill 17xx introduced the solar tax incentive. The value of the incentive was 15% of system costs for systems under 200 kW in capacity (<http://www.californiasolarcenter.org/legislation.html>). In addition, California offers a property tax exemption for solar projects. This means that the assessed value of the property at which the solar equipment is located will be unaffected by the added value of the solar project.

³ This summary of tax incentives was prepared based on a review of information available from the Database of State Incentives for Renewables and Efficiency, as well as relevant enabling legislation and publications from the U.S. Internal Revenue Service. The descriptions contained in this section have not been reviewed by a tax professional.

⁴ IRS Form 8835 provides a complete description of qualifying resources and facilities.

Another tax incentive that can substantially enhance project economics is an accelerated depreciation provision called the “**Modified Accelerated Cost Recovery System**” (MACRS). The Internal Revenue Service defines depreciation as “an annual income tax deduction that allows you to recover the cost or other basis of certain property. It is an allowance for the wear and tear, deterioration, or obsolescence of the property.”⁵ While most DG technologies have operating lives on the order of twenty years, under MACRS, all SGIP-eligible technologies other than internal combustion engines or turbines running on Waste Gas Fuel can depreciate the value of their system over a five-year period. Since depreciation is a tax *deduction* and not a tax *credit* it does not hold the same amount of value for project owners as do the BETC and the PTC, and the value is dependent on the tax bracket of the entity that owns the DG system.

The BETC, PTC and MACRS must all be claimed by private entities. And in general, the larger the tax burden of the entity, the larger the value of the tax incentive.⁶ However, a project located on public property can also benefit from these incentives if it is owned by a private entity. Entities with little or no tax burdens can enter into a variety of ownership, leasing, or service contract arrangements which enable the entity with the largest “tax appetite” to own the facility and maximize the potential to take advantage of tax incentives. Under certain arrangements, after this entity fully exhausts all tax benefits, ownership will revert to a different structure more suitable for the remaining term of the project’s operational life.

The inability of public projects to directly take advantage of federal tax incentives does not appear to have seriously limited the development of public projects under the SGIP. Over one thousand public projects were funded under the Program from 2001 through 2006. This represents 31 percent of all funded projects during that period. Considering the numerous bureaucratic limitations associated with capital expenditures by public entities, one might expect fewer projects to be developed by public entities even in the absence of a disparity in incentive benefits between public and private projects.

Clean Renewable Energy Bonds (CREBs), a unique type of tax incentive, can directly benefit public projects. Enacted under the Energy Tax Incentives Act of 2005, CREBs are a form of bond in which the bondholders receive tax credits instead of interest payments from the bond issuer. By taking advantage of CREBs qualified entities can borrow at a zero percent interest rate. Qualified entities include State and local governments, cooperative electric companies, CREB bond lenders and tribal governments. CREBs share similarities with both tax-exempt bonds and “qualified zone academy bonds” (QZABs). CREBs differ from tax-exempt bonds in two key ways: 1) tax credits resulting from a CREB are treated as taxable income for the bondholder; and 2) tax credits resulting from a CREB can be used to offset current-year tax liability. The primary difference between CREBs and QZABs is that any taxpayer can hold a CREB, whereas QZABs must be held by qualified financial institutions.

Non Tax-Related Federal Financial Incentives

The **Renewable Energy Production Incentive (REPI)** has been widely used by public entities in California and throughout the country since its inception in 1992. Qualifying entities include State and local governments, municipal utilities, rural electric cooperatives and Tribal

⁵ Internal Revenue Service Publication 946, “How to Depreciate Property.”

⁶ In cases where state incentives are considered non-taxable, the amount to which the federal tax incentives apply (“tax basis”) must be reduced by the value of the state incentive. However, in most cases, rebates are considered taxable incentives and, therefore, do not affect the tax basis. (Wiser and Bolinger, 2006).

governments. Project owners receive incentive payments of 1.5 cents per kilowatt-hour⁷ for the first ten years that a system is in operation. REPI program funding depends on congressional appropriations. Therefore, unlike tax-related incentives, the program faces budget limitations which vary each year. In any given year, if insufficient funds exist to provide full payment to all applicants, 60 percent of appropriated funds will be paid to solar, wind, ocean thermal, tidal energy, wave energy, geothermal and closed-loop biomass projects. The remaining 40 percent of funds will be paid to fuel cell projects using renewable fuels, livestock methane and other eligible projects.

A **USDA grant / guaranteed loan program** provides private agricultural producers and rural small businesses with financial assistance for a variety of renewable energy technology applications. This program provides grants covering 25% of project costs up to \$500,000, and guaranteed loans for 50% of project costs up to \$10 million.

A **Department of Defense (DOD) Fiscal Year 2003 Climate Change Fuel Cell Program** was funded by DOD, but is administered by DOE through the Bonneville Power Administration. Four SGIP projects that received SGIP funding in 2004 and 2005 took advantage of this fuel cell incentive program. Three other projects that received SGIP funding in 2001 took advantage of funding under an earlier DOE fuel cell grant program.⁸

Table C1 provides a summary of the federal incentive levels, applicability to public and private projects, as well as sunset provisions for the financial incentives described above.

California Municipal Utility PV Incentive Programs

A number of California's municipal utilities have offered discount loans and PV rebate programs since 2001 with rebate values ranging from \$2.50 per watt to \$4.50 per watt of installed capacity.⁹ While many utilities have offered valuable incentives, the only two which have seen substantial participation by SGIP-funded projects are those offered by the LADWP and SMUD. As part of its "Green LA" program, LADWP made a remarkable commitment to solar when it budgeted \$150 million over ten years to achieve a target of 100,000 PV installations by July, 2011.¹⁰ The LA PV program initially offered a base of \$3.50 per watt of installed capacity, plus an additional dollar per watt for projects using equipment manufactured in LA.¹¹ Over seventy SGIP-funded projects took advantage of the additional financial benefits offered by the LADWP solar rebate from 2001 through 2006. The presence of this program and the associated marketing and public awareness benefits for solar have undoubtedly contributed to the ability of SCG, the SGIP Program Administrator serving the LADWP territory, to increase SGIP participation by solar project owners.

⁷ The 1.5 cent per kilowatt-hour incentive level was set based on 1993 dollars. The incentive level is indexed each year to account for inflation.

⁸ Information on the DOD program is available at http://www.bpa.gov/energy/n/projects/fuel_cell/dod_climate_change/.

⁹ Municipal utilities offering PV rebate programs include: Anaheim, Colton Public Utilities, Hercules Municipal Utility, Imperial Irrigation District, LADWP, Palo Alto, Redding Electric, Roseville Electric, Silicon Valley Power, SMUD and Ukiah Utilities. Further information on these programs is available at <http://www.dsireusa.org/library/includes/map2.cfm?CurrentPageID=1&State=CA&RE=1&EE=0>.

¹⁰ Source: <http://www.newrules.org/electricity/ladwpsolar.html>.

¹¹ The Green LA Solar Program currently offers incentives based on estimated system performance. More information on the incentive program is available at <http://www.ladwp.com/ladwp/cms/ladwp004196.jsp>.

While not playing nearly as large a role as the Green LA Solar Program in boosting funding for SGIP-funded solar projects, the SMUD PV incentive program was sited as an additional funding source for 18 SGIP-funded projects during the period 2001 through 2006. PG&E is the SGIP Program Administrator for the SMUD service territory. The SMUD program currently offers a \$2.00 per watt incentive for projects also receiving funding under the SGIP. Only the SMUD and Roseville Electric rebate programs provide lower incentive levels for projects also receiving funding from other sources such as the SGIP.

Table D-1. Summary of Other Financial Incentives for SGIP-Funded Projects

Tax Incentive	Relevant Technologies ¹²								Public Projects Eligible?	Private Projects Eligible	Sunset Date
	Solar Photo-voltaic	Wind	Fuel Cells (Renew-able Fuels)	Fuel Cells (Non-Renew-able Fuels)	Micro-turbines (Renew-able Fuel)	Micro-turbines (Natural Gas)	Micro-turbines (Waste Gas)	Waste Gas Internal Combustion Engine or Turbine			
Current SGIP Incentive Level Category	No longer funded through SGIP	Level 2	Level 2	Level 3	Level 2	Level 3	Level 3	Level 3			
Business Energy Tax Credit ¹³	30% of installed system cost		30% of installed system cost	30% of installed system cost	10% of installed system cost	10% of installed system cost	10% of installed system cost		N ¹⁴	Y	1/1/09 (solar credit reduced to 10%, fuel cells and microturbine credits expire)

¹² Only highlights technologies that are also eligible for SGIP incentives. Although solar photovoltaic projects are no longer eligible for incentives under the SGIP, the technology is included in the table since it comprised such a large percentage of SGIP projects prior to 2007.

¹³ For solar technologies, the Business Energy Tax Credit continues at current rate for systems put in service before December 31, 2008, then drops to 10% in 2009. For fuel cells and microturbines, the incentive expires after December 31, 2008.

¹⁴ Although public projects are not eligible to take advantage of this tax incentive, they can benefit from the incentive if the project is owned by a private entity that can take advantage of the incentive.

Tax Incentive	Relevant Technologies ¹²								Public Projects Eligible?	Private Projects Eligible	Sunset Date
	Solar Photo-voltaic	Wind	Fuel Cells (Renew-able Fuels)	Fuel Cells (Non-Renew-able Fuels)	Micro-turbines (Renew-able Fuel)	Micro-turbines (Natural Gas)	Micro-turbines (Waste Gas)	Waste Gas Internal Combustion Engine or Turbine			
<i>Max Incentive</i>			\$500 / 0.5 kW	\$500 / 0.5 kW	\$200 / kW	\$200 / kW	\$200 / kW				
<i>Eligible System Size</i>			>= 0.5 kW	>= 0.5 kW	<2 MW	<2 MW	<2 MW				
Modified Accelerated Cost Recovery ¹⁵	X	X	X	X	X	X	X		N	Y	N/A
Corporate Production Tax Credit ¹⁶		1.9 cents / kWh for 10 years			1.9 cents / kWh for 10 years				N	Y	12/31/08
Clean Renewable Energy Bonds (CREB) ¹⁷		X			X ¹⁸				Y	N	12/31/08

¹⁵ All technologies with an “X” for this incentive are classified as “five-year property” for the purposes of depreciation. This means that owners of qualifying technologies can recover the cost of their investment over a relatively short five-year period as opposed to depreciating the equipment more gradually over its full lifetime.

¹⁶ Applies for first ten years system is in operation. Incentive is applicable to projects going into service before December 31, 2008.

¹⁷ Under the Energy Tax Incentives Act of 2005 State and local governments, cooperative electric companies, clean renewable energy bond lenders and Indian tribal governments are able to issue “clean

Tax Incentive	Relevant Technologies ¹²								Public Projects Eligible?	Private Projects Eligible	Sunset Date
	Solar Photo-voltaic	Wind	Fuel Cells (Renew-able Fuels)	Fuel Cells (Non-Renew-able Fuels)	Micro-turbines (Renew-able Fuel)	Micro-turbines (Natural Gas)	Micro-turbines (Waste Gas)	Waste Gas Internal Combustion Engine or Turbine			
California Solar Property Tax Exemption ¹⁹	X								N/A	Y	12/31/09
Renewable Energy Production Incentive (public entities) ²⁰	1.5 cents / kWh for 10 years	1.5 cents / kWh for 10 years	1.5 cents / kWh for 10 years		1.5 cents / kWh for 10 years				Y	N	Congress authorized to make appropriations through 2026
USDA Renewable Energy	Grants:	Grants:	Grants:	Grants:	Grants:				N	Y	FY 2007

renewable energy bonds” (“CREBs”) to finance certain renewable energy and clean coal facilities. Under the CREB provisions, interest on bonds is paid in the form of tax credits to the bondholder, in lieu of interest paid by the bond issuer. This provides qualified issuers / borrowers the ability to borrow at a 0% interest rate.

¹⁸ CREBs apply only to microturbines powered by closed-loop or open-loop biomass.

¹⁹ This incentive allows solar project owners to avoid adding the PV system value to their assessed property value for tax purposes. The incentive will remain in place for systems installed through December 31, 2009.

²⁰ Eligible projects include those owned by Tribal Government, Municipal Utility, Rural Electric Cooperative, State/local governments that sell project's electricity. Incentive level is 1.5 cents / kWh in 1993 dollars, indexed for inflation. The Energy Policy Act of 2005 authorized appropriations for the REPI from 2006 through 2026. Actual payments received by projects are subject to availability of funds. If insufficient funds are available to fulfill all applications, 60 percent of available funds are allocated to projects using solar, wind, ocean, geothermal and closed-loop biomass technologies.

Tax Incentive	Relevant Technologies ¹²								Public Projects Eligible?	Private Projects Eligible	Sunset Date
	Solar Photo-voltaic	Wind	Fuel Cells (Renew-able Fuels)	Fuel Cells (Non-Renew-able Fuels)	Micro-turbines (Renew-able Fuel)	Micro-turbines (Natural Gas)	Micro-turbines (Waste Gas)	Waste Gas Internal Combustion Engine or Turbine			
Grants	25% of project costs; Guaranteed Loans: 50% of project costs	25% of project costs; Guaranteed Loans: 50% of project costs	25% of project costs; Guaranteed Loans: 50% of project costs	25% of project costs; Guaranteed Loans: 50% of project costs	25% of project costs; Guaranteed Loans: 50% of project costs						
<i>Max Amount</i>	Grants: \$500,000; Loans: \$10 million										
Department of Defense FY2003 Climate Change Fuel Cell Program			\$1,000 / kW up to 1/3 of total project cost	\$1,000 / kW up to 1/3 of total project cost					Y	Y	Program will continue until \$1,000 in program funds are no longer available

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**APPENDIX E:
EXTERNAL MARKET VARIATION**

E EXTERNAL MARKET VARIATIONS

This section provides insight on external market variations including air emissions regulations, building construction regulations, interconnection and tariff issues, and demographics.

E.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 a relatively 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 NO_x 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 NO_x 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).²¹ 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.

There are 35 air districts throughout California; a majority of air districts are defined based on the jurisdictional County boundaries, while other districts consist of multiple counties (in whole or in part). Figure E-1 presents a map of the AQMDs and APCDs. CARB provides a web resource for identifying the applicable air district.²² (For the purposes of this report, AQMD will be used as the generic reference for air districts.)

²¹ 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.

²² The California Air Resources Board (CARB) provides a "look-up tool" by zip code, city, or county for determining the applicable air agency. The site is located at: <http://www.arb.ca.gov/app/dislookup/dislookup.php>.

Figure E-1. California Air Districts



Source: California Air Resources Board

Each of the AQMDs has a unique set of air quality rules and regulations, as well as a prescriptive permit processing procedure; Web site information and agency contacts are available.²³ 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.

The application content basics include review and determination of the following:

- complete permit application forms information;
- sufficient fee payment for application processing;
- accurate technical support data regarding proposed equipment and operations, *e.g.*, equipment information, operating scenario, general process flow;
- accurate technical analysis required for evaluation air quality impacts and features, *e.g.*, air quality modeling, BACT evaluation, emission estimates;
- site-specific information, *e.g.*, regional location, site map/plot plan, nearby sensitive receptors such as residences and schools; and
- air quality regulatory analysis, *e.g.*, source classification as major or minor, public notification applicability (for proximity to K-12 school), applicability of emission offset/credit requirements.

²³ Air district contact persons and web resources are maintained by the CARB at the following web site: <http://www.arb.ca.gov/capcoa/roster.htm>.

The emissions compliance test, which is typically conducted within a reasonable time frame after construction and installation, is the determining factor whether emission limits are being met. The SGIP's previous year's level of 0.14 lb/MWh has been achievable, particularly with the installation of add-on control technologies and improvements in combustion technologies. For the SGIP participants going forward through 2007, emissions testing must be conducted to confirm the NO_x exhaust emission level is no greater than 0.07 lb/MWh, which is significantly less than the previous years' requirements. To do so, at a minimum, the load, heat rate, and mass emissions must be determined.

The air permit process proceeds at a pace that is independent of the SGIP deadlines and milestones, even though the SGIP process requires AQMD approval for projects with emissions. That is, although there are required milestones in the SGIP regarding project advancement and installation, an AQMD is not mandated to issue its approval to developers any sooner than another permit applicant that is not an SGIP applicant. There is no preferential treatment afforded SGIP applicants in the typical air permit process, nor should one be expected or pursued.

E.1.1 Air emissions issues as a constraint on SGIP projects

Based on project experience and research for this report, the following section highlights the main issues and constraints associated with SGIP projects fulfilling air emissions requirements.

- Required NO_x emission level (of 0.07 lb/MWh after January 1, 2007) can be more stringent than non-SGIP applicants need to achieve for comparable technologies. An AQMD does not prescribe this level for the permit process, rather, an air district evaluates BACT on a case-by-case basis.
- AQMD timelines to issue permits can cause delays for meeting SGIP milestones, and create the need for SGIP extensions.
- Clarification of air permit application timelines and completeness can minimize or eliminate delays.

The view of air regulators

Interviews with air regulators regarding their knowledge and perception of SGIP developer applications and PAs were conducted. Air district representative responses regarding activities relating to the processing of SGIP applicants' permit applications (and non-SGIP applicants) include the following:

- **SGIP NO_x requirement-** In general, of the representatives interviewed (and their knowledge of other permit reviewers' knowledge base in their districts), the AB 1685 NO_x requirement is not held as the prescriptive BACT level. Air districts will still evaluate emission levels based on the traditional "case-by-case" BACT criteria.
- **BACT-** With an AQMD's traditional BACT process, The 0.07 lb/MWh NO_x level required by the SGIP program would not typically be required by an AQMD, because BACT is a "case-by-case" evaluation.
- **Waste heat-** AQMDs do not count the thermal energy portion of a cogeneration project when determining emission impacts, although the SGIP legislation establishes requirements for thermal energy.
- **Application completeness-** Air regulators explain that applications are often incomplete because insufficient details are provided for demonstrating BACT, for stack exhaust parameters (e.g., exhaust

flow rate, height, exhaust temperature), for providing dimensions of nearby buildings and structures, and for equipment description details.

- **The permit to operate-** The permit to operate (P/O) is the goal for demonstrating compliance. To obtain a P/O, an emissions compliance test is necessary. Obtaining a P/O for the final compliance requirement can be a time-consuming process, just as obtaining an authority to construct (A/C).
- **Local air requirements-** Possible new local air requirement for IC engines in the South Coast AQMD including Rule 1110.2, which if adopted July 2007, will prescribe the 0.07 lb/MWh NO_x level, more frequent source testing, periodic emissions monitoring by the use of portable analyzers, continuous emissions monitoring for certain sized engines and for the combination of engines is 1,000 hp or greater, and limits on start-up for normal operating conditions.

The view of project developers

In-depth interviews with developers included inquiries into air emissions issues, both direct, in terms of challenges with permitting and meeting regulatory requirements, and indirect, such as meeting select SGIP process milestones. Developer responses indicate that air emission issues are a barrier to timely and economic completion of SGIP projects.

Overall, the major themes regarding developer comments and experiences with AQMD's are based on delays resulting from changes mid-stream of application review and from the overall bureaucracy. Highlights include the following:

- **Meeting deadlines** - In response to meeting SGIP deadlines, air quality district issues were cited as a cause for requesting extensions.
- **NO_x emissions requirement** - The change in the NO_x emission requirement was cited as impacting developers who either were not aware or not prepared to meet the SGIP requirements. The SGIP level (*i.e.*, CARB 2007 air emission requirement of 0.07 lb of NO_x/MWh, 60% efficiency requirement) was cited as not achievable.
- **Air agency bureaucracy** - For technologies that require CARB certification (per SB1298 requirements for permit exempt units), the bureaucracy for obtaining certification was cited as being problematic.
- **Third-party/consultant to address air district requirements** - Rather than directly deal with an air district, developers often hire a consultant to manage the air permitting process. Even with a consultant and a pre-application with the air district to confirm the plan for the application, problems can occur.

E.1.2 Actions PAs have taken

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. It was clear that PAs recognize that air emissions permitting can be a significant issue and one that they can not control, as interviews with all four PA offices confirmed. 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, an SCE 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. 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.

Differences among PAs

During their interviews, PAs were specifically asked the following:

- what role they have played in assisting SGIP applicants using reciprocating engines, gas turbines, or microturbines with meeting local air quality regulations;
- whether the PA has served to facilitate permitting; and
- what information exchange has occurred between the PA and the air district.

Although instances are described where obtaining the final permit to operate for a few SGIP applicants has exceeded a year, there have been little differences in the PAs approaches to AQMD offices.

Responses include the following:

Conditional interaction with air district – PA interaction beyond project-specific discussions with the AQMD has been limited to an as-needed, ad-hoc basis, rather than on a proactive, early-involvement effort. Also PAs have called AQMDs to enquire as to permit status.

In general, PAs view the air district as potentially presenting a barrier; but, they also recognize that there is little that can be done to alleviate this barrier for SGIP applicants other than educate them about possible delays caused by a slow and independent air emission permitting process.

E.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.²⁴ 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.

In California, the building permit process is not subject to California Environmental Quality Act (CEQA)²⁵ review or the time limits imposed by the Permit Streamlining Act²⁶. Building permits are required for self-generation projects that include equipment replacement, addition to an existing building, or a component of a new building, which means that they would be required for all SGIP projects. These permits are issued only after the city or county building departments have determined that:

- The permit package is complete;
- The project complies with all applicable building codes; and
- The project has received all other approvals (e.g., conditional land use permits, air permits, etc.)

Local jurisdictions enforce the California Code of Regulations (CCR, Title 24)²⁷, 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 installations²⁸:

- 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)

E.2.1 Public Entities

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.²⁹ 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).

²⁴ Energy and Environmental Analysis Database: <http://www.eea-inc.com/rrdb/DGRegProject/Firecode.html>

²⁵ CEQA web site can be found at: <http://ceres.ca.gov/ceqa/>

²⁶ Information on the PSA can be found at: http://ceres.ca.gov/planning/pub_notice/part2.html

²⁷ Information on the California Building Standards Code can be found at: http://www.bsc.ca.gov/title_24.html

²⁸ California Energy Commission's Distributed Energy Resource Guide:
http://www.energy.ca.gov/distgen/permitting/building_permits.html

²⁹ California's Coalition for Adequate School Housing: <http://www.cashnet.org/resource-center/Section1/1-1-1.html>

Trying to comply with BCR and obtain the necessary approvals from code inspectors can prove to be both tedious and frustrating for developers and host customers attempting to gain timely SGIP project approval, and ultimately, SGIP rebate monies. BCR officials are responsible for public health, life safety, and welfare—responsibilities that promote conservative decision-making.

E.2.2 Building construction regulations as an obstacle

The following highlights the main issues and constraints associated with SGIP developers' ability to work through the BCR process in a timely manner based on project experience and our research for this report.

- **SGIP projects may consist of relatively new technologies** – Many code officials may ask for onerous site-specific testing, evaluations, and approvals from the code enforcement officer for these "emerging technologies" due to the lack of familiarity with the technology.
- **BCR officials' timelines to issue permits are not consistent with the SGIP process**
- **Ad-hoc nature of BCR system overall** – The lack of efficiency can create considerable additional costs and add significant time on to the length of an SGIP project.

Incremental steps to improve the building construction regulations obstacle have been taken over the past decade, with national model codes increasingly referring to emerging DER technologies. Further work is clearly needed to educate the design, construction, and code communities that are implementing SGIP technologies and enforcing regulations.

The view of project developers

Over half of the project developers interviewed reported that one of the key obstacles in advancing SGIP projects and meeting the one-year project deadline is dealing with local and state BCR. The problems cited were particularly acute for projects involving new construction and/or public entity projects, much of which can be out of a developer's control.

New construction projects have additional needs that revolve around everything from weather-related issues and design issues to permitting issues and equipment delays. Public entity projects have their own set of construction approval and bidding processes that can add considerable time on to the length of a project. In fact, based on the information the Summit Blue team gathered from developers, it's commonplace for public entity projects to ask for (and be granted) project extensions due to delays regarding permitting and other issues.

For private entity projects, one of the biggest problems with building construction regulations for developers is the lack of consistency from one area to the next. For each local area, a developer must basically start from scratch when dealing with local building and planning departments. In some cases, local processes are fairly simple and straightforward. But in others, they can be quite involved. In fact, for one project, the project approval process alone took seven months to complete.

Developers interviewed frequently noted that getting through the local building permitting authorities is an art, not a science, and that it involves building a "person-to-person relationship." They also noted that it's "very man-power intensive." Additionally, since many local jurisdictions are not well-versed in distributed energy technologies, developers also become educators for staff in these departments, and sometimes even for local municipalities.

E.2.3 Actions PAs have taken or could take

It was clear from interviews with PAs that they generally seem to recognize BCR permitting can be a significant issue, though there is little that they have done in response to it. A review of each PA's web site seemingly supports the notion that because it's 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.** A PG&E flyer on solar power contains a ten-step description of the SGIP process, and includes "obtain permits," explicitly mentioning building and electrical permits from city or county building departments.
- **Staying on top of permitting requirements.** PG&E staff try to stay on top of city requirements to ensure no unnecessary requirements. SDG&E participates in monthly meetings in San Diego with code officials. It would be worthwhile for all PAs to meet with local code officials under the auspices of the International Association of Electrical Inspectors and the International Code Council.
- **Providing deadline extensions.** PG&E PA staff noted they try to accommodate customers as much as possible, and that they "want this to be a relationship building experience." They acknowledge that due dates for milestone dates are often not met because of situations out of the developers' and host customers' control. In these cases, PG&E staff work with the customer to extend the deadlines.
- **Bringing stakeholders together.** SDREO has occasionally offered to bring all the stakeholders of a particular project together to try and work out the outstanding permitting issues.

Differences among PAs

PAs were specifically asked what role they have had in assisting SGIP applicants in local building construction regulations. There was little in response that PAs offered regarding what they have done to aid SGIP stakeholders in this area. However, PAs did mention the following activities:

- PG&E has included some limited permitting information in its September 2006 flyer on Solar Power for Business (C-1705). Additionally, PG&E SGIP staff says it has worked to stay informed of local permitting requirements, in order to ensure there are no unnecessary requirements. PG&E's PA staff also noted that it has provided project deadline extensions in cases where issues out of the control of developers and host customers have come up.
- SDREO staff mentioned they occasionally offered to bring all the stakeholders of a particular project together to try and work out the outstanding permitting issues. SDREO has held workshops on building permitting.

E.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 affect the economic playing field for potential.

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 these issues are outside of the control of the program, but not the broader PA organization. For SCG and SDREO, all interconnection and tariff issues are outside of their control. Still, PAs can play an expanded role in educating potential host customers and project developers on the impact these areas can have on project.

E.3.1 Description of issues

Utility interconnection department issues

Over the years, interconnection costs, process and unfriendly tariff structures have been commonly cited by distributed energy resource (DER) developers in explaining shortfalls in market uptake of their technologies. Even the U.S. DOE implicitly backed the contention of interconnection as a significant barrier to DER with its May 2000 report, *Making Connections: Case Studies of Interconnection Barriers and their Impact on Distributed Power Projects* (NREL/SR-200-28053), which portrayed 65 case studies of projects that faced interconnection problems. Even prior to the DOE report's release, in October 1999, the California Public Utilities Commission (CPUC) issued an order instituting a new DER rulemaking (99-10-025) that included tackling interconnection standards. This process led to the creation of California's simplified interconnection process, Rule 21.

According to interviews, utility interconnection departments find the two biggest delays to approving interconnection are due to:

- Incomplete and late submission of project information and interconnection plans by project developers, who might be looking for quicker turn-around in the process than is possible or required
- On-site inspection revealing a difference between what the utility interconnection office approved and what the developer ended up installing

Still, the five utility interconnection departments interviewed said that most developers are timely in their submission.

One utility (PG&E) also reported that customer/project developers sometimes schedule on-site inspection, but are not ready for the inspection on the day scheduled. This office, following the current corporate focus of PG&E, also recognizes that the multiple contact points (interconnection, metering, tariffs, etc.) can be confusing to its customers, and is working toward aligning customer service to have a single touch point for customer interaction.

Utility tariff department issues

Tariffs are the means by which utilities recover their cost of providing service plus earning their regulatory-approved rate of return. Tariffs are also used extensively by policymakers to fund programs related to the electric utility industry (such as the SGIP program) and for municipal utilities, often as a means of funding non-energy-related budgetary expenditures. A December 2005 U.S. DOE report, *Rate*

Structures for Customers with Onsite Generation (NREL/SR-560-39142), describes in some detail many of the obstacles to DER projects from conventional tariff design. California has aimed to eliminate some of the barriers customer-sited generation projects face due to tariff structure and specific charges. For example, the legislature and CPUC has temporarily eliminated utility standby fees for DER projects less than 5 MW in capacity, and expanded the use of net energy metering for selected on-site generation technologies, in particular, PV and small wind.

Utility staff involved in tariff issues clearly understand the impact, often negative, that utility tariffs (and even their own utility's tariffs) can have on DER projects. LADWP admits that since it restructured its tariffs to increase the fixed charge components of them roughly three years ago, it has received few applications for interconnecting rotating equipment (nonrenewable gas-fired) projects. Although the decrease is likely to be the result of high natural gas prices that hurt natural-gas-fired cogeneration projects, it is interesting to hear that LADWP acknowledges that its tariff changes made on-site generation less economically attractive to energy users.

LADWP describes its tariffs as being fairly inflexible, and if a customer has on-site generation, that customer will typically fall within a specific tariff and not have the option to choose a different tariff. LADWP also says that it has a fixed distribution charge that is the equivalent of a standby charge, in that it cannot be avoided. This charge, which covers supplemental capacity and backup capacity, is priced at around \$5/kW/month and combines the peak demand of utility usage *and* the peak output from the customer-sited generator.

SDG&E staff says it tries to warn prospective PV customers about tariff challenges. In fact, SDG&E held a public workshop on March 2, 2007 to better explain its tariff structure and the result of disappointing returns for SGIP PV host customers.

Net metering creates special issues for utility tariff and billing departments. For examples, PG&E tariff staff described those significant challenges utilities have in modifying their billing systems to handle net energy metering (NEM) given the complexity of the annual true up in particular. But even on the monthly basis, utility systems are set up to see negative energy consumption (which utility billing systems sometimes confuse with energy theft). SCE agrees that NEM has created complexity – to such a degree that SCE has needed to manually produce bills for NEM customers. (In March 2007, however, SCE will inaugurate a new automatic billing system for NEM customers.)

The CSI requires that all funded projects require customers to be on time-of-use (TOU) tariffs. Our discussions with utility tariff department personnel (and other SGIP stakeholders), though, clearly uncovered the view that they do not believe that existing and potentially future TOU tariffs will be beneficial to PVs. A tariff specialist at SMUD asserts that TOU rates will be very detrimental to PV project development under the CSI, especially for those customers who otherwise would be on the baseline/tier residential rates. SMUD's tariff expert is less certain that it will adversely affect C&I customers who otherwise would be on tariffs structured differently, but he believes that TOU rates are actually one of the worst tariff rates for PV.

Despite this view, TOU tariffs do not necessarily have to be bad for solar or other DER projects. It depends on the details in a TOU tariff. SCE, for example, released new TOU tariffs aimed at solar projects in December 2006. The company's GS-2 TOU Option A and Option B tariffs³⁰ provide a far more positive treatment of solar than prior tariffs.

³⁰ Available at <http://www.sce.com/NR/sc3/tm2/pdf/ce30-12.pdf>.

Utilities report that host customers for both SGIP and the California Energy Commission's Emerging Renewables Program sometimes believe that under NEM tariffs, they can potentially be paid for excess energy. In fact, energy users are only able to obtain an annual true-up or credit against consumption, and not a check from the utility. This misunderstanding creates a surprise – and unfulfilled economic expectations – for some NEM customers.

Despite the attention to date to these issues, interconnection and utility tariffs both create economic challenges for successful development of DER projects, and SGIP projects specifically. The experiences of SGIP project developers and host customers illustrates that there remain barriers to on-site generation projects. Rule 21, which is administered as a tariff for IOUs by the CPUC, has clearly made interconnection procedures and requirements far more transparent in California, but it has not solved all the challenges facing DER facilities when they go to interconnect to the utility grid. Even with Rule 21, the interconnection process is by no means non-trivial. Still, despite specific issues with one utility (PG&E), most SGIP developers and host customers do not perceive interconnection as being a major barrier to successful SGIP projects.

Developers, host customers, and other stakeholders, however, do believe that utility tariffs remain a barrier to success SGIP project development. In particular, some tariffs in place at regulated utilities (SDG&E) and municipal utilities (LADWP) are perceived as being punitive to SGIP projects and are cited as a significant barrier to making the economics work for projects.

E.3.2 Examples of problems from the field

Project developer and host customers cited interconnection and utility tariffs as barriers to SGIP projects, with developers focused more on interconnection, and host customers on tariffs.

Interconnection in the field

Overall, SGIP project developers do not see interconnection as being a major external barrier to SGIP project development or success. That being said, a minority of SGIP developers, particularly those installing projects that were developing projects using rotating equipment for generating electricity from renewable and non-renewable gas report having experiences where meeting investor-owned and municipal utility interconnection requirements have been very challenging.

Seven project developers (of 25 interviewed) explicitly cited problems with PG&E's interconnection department. Five of these developers told of similar experiences with PG&E where PG&E's central engineering department approved an interconnection plan, but PG&E's field inspectors would later demand changes be made to the interconnection configuration or require hardware additions. The project developers discussed this problem as being a well-known issue within the self-generation community. On the other hand one SGIP host customer, however, found that working with SCE's interconnection department to be far more challenging compared to PG&E's.

Although SGIP host customers were less vocal about interconnection issues than project developers, the focus groups uncovered experiences where utility interconnection and metering issues created delays and angst. A number of host customers reported that they encountered what they considered unnecessary delays due to foot-dragging (LADWP) or changing metering requirements (PG&E). Host customers believe the annual interconnection agreement renewal required for cogeneration projects to be burdensome, even though there was recognition of the requirement being driven by safety concerns.

Tariffs in the field

SGIP host customers (and even utility personnel) recognize the challenges created by existing utility tariffs for on-site generation projects. The impact that utility tariffs have on the SGIP program, though, appears to be quite different among utility territories. In brief, existing tariffs in LADWP and SDG&E territories apparently make the economic viability of SGIP solar projects far more challenging than those tariffs available in PG&E's and SCE's territories.

Time of use (TOU) tariffs with significant demand charges, particularly non-coincident peak demand charges, result in SGIP host customers failing to achieve the electric bill savings they anticipated. In particular, SDREO host customers complained about the ALTOU, AYTou, and ATOU tariffs in SDG&E's territory.

The challenging tariff environment may be decreasing SGIP applications, as SDREO reports that for 2006, it's applications for PV were undersubscribed. SDREO reported receiving a low number of applications in 2006, with only a few after March 2006. (Note that neither SCE, nor SCG fully subscribed their PV programs either in 2006.) SDREO, too, had been hearing from current and potential SGIP host customers about the challenges presented by SDG&E's tariffs, and it partly attributes to SDG&E being "fully de-regulated."

A fundamental problem with tariffs for energy users attempting to calculate their return on an investment in an SGIP (or energy efficiency, etc.) project is that utility tariffs are transitory. That is, a utility tariff is not permanent over the life of a customer-sited project. Tariffs can change, and often do change. When it is to the detriment of the customer, they are usually very vocal about such changes. For SGIP projects, the moving target of utility tariffs create not just an economic hurdle, but a risk barrier as well.

E.3.3 Actions PAs have taken

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 for SGIP applicants. The PAs already are providing some information, though have the potential to do more. Below are the activities currently underway and other potential activities are proposed.

Interconnection

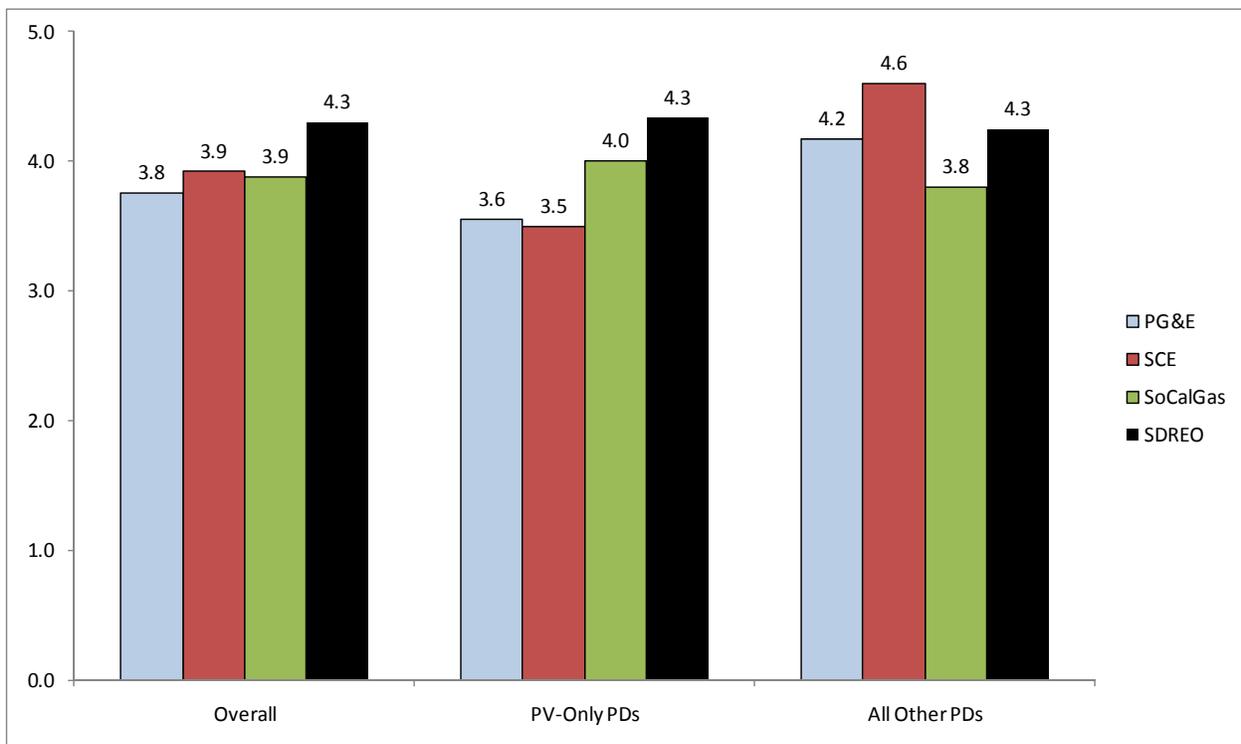
PAs are allowed to approve SGIP incentive payments only for projects that have been approved by the local electric utility for grid interconnection. Thus, PAs ensure that SGIP applicants pursue such approval. But PAs have taken additional steps to actually assist SGIP projects with the interconnection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

- Working with utility interconnection departments on outreach activities, including presenting and exhibiting at industry meetings;
- Contacting utility interconnection offices to inquire on specific project and/or prompt utility action;
- Providing detailed information on interconnection requirements and process via presentations and on PA Websites; and

- Being a catalyst for SGIP applicants to contact the utility interconnection office to start the approval process.
- PG&E's internal process on alignment to improve service is increasing awareness within the company.
- PG&E has also participated in internal discussions on PG&E's review and revision of its policy on disconnect switch requirements for PV projects.

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 E-2).

Figure E-2. Mean Project Developer Ratings for Project Administrators' Interconnection Helpfulness



Tariffs

Unlike interconnection, which is a requirement for SGIP projects, there's no obligation for PAs to query applicants or become involved in tariff issues. Despite this, the PAs recognize that understanding existing tariffs and their impact on the economics of a SGIP is central to their role as program administrators. However, their role is again limited in terms of the impact they can have beyond educating developers, potential host customers, and other stakeholders.

Actions PAs have taken include:

- Education on tariffs and their impact on project economics.

- PG&E will assist customers to connect with utility bill analyzers and accounting representatives to determine what tariff is best for SGIP customers.
- One PA has held classes for host customer, project developers, and other stakeholders titled "Understanding Financial Analysis Methods for PV Systems," in 2006 and earlier.
- SCE has included a summary of departing load charges and standby charges in its tariffs and how these can impact DER project economics in presentations it has made to SGIP stakeholders. SCE also has a central point-of-contact within the billing department to address questions on NEM. For customers with other questions on tariffs and billing, account managers and billing department personnel are able to work with them on not just selecting the right tariff, but ensuring that the DER technology is properly sized to take advantage of available tariffs. Furthermore, SCE's PA for the CSI has recruited a tariff colleague to present SCE's new solar-friendly tariffs to a meeting in Santa Monica, California in the near future.
- SDREO is working to highlight the difficulties made by SDG&E's TOU tariffs through direct contact with the utility.

There is one potential activity that PAs could take to better highlight the impact of tariffs on SGIP projects. The SGIP has a standard "Project Cost Breakdown Worksheet" for applicants to use in order to determine their incentive rebate. In order to ensure SGIP applicants fully understand the impact of electric utility tariffs on the ultimate economics of their projects, the PAs should consider including the option for applicants to calculate the return of their investment, specifically highlighting the potential negative impacts demand charges or TOU pricing can have on projects, though not requiring submission to the PA office of this analysis.

E.4 Demographics

Information about the effect of demographics on the SGIP has been summarized in Section 4 of the Program Administrator Comparative Assessment. No supporting information is located in the appendices.