

Self-Generation Incentive Program (SGIP) 2007 Evaluation Summary

BACKGROUND

This briefing summarizes the results of four substantial studies on the Self-Generation Incentive Program (SGIP) through 2006 managed by Summit Blue Consulting, with research partners Energy Insights and RLW Analytics. The SGIP has provided financial incentives to eligible utility customers for the installation of new self-generation equipment. The four studies summarized below were required by Administrative Law Judge Ruling dated May 18, 2006 under R.06-03-004: the Program Administrator Comparative Assessment (filed with the CPUC on April 25, 2007), the Market Focused Process Evaluation (filed with the CPUC on August 9, 2007), the Market Characterization Report (filed with the CPUC August 30, 2007), and the Retention Study (filed with the CPUC on December 3, 2007). Note that the SGIP is administered by the major IOUs in their territories with the exception of the San Diego Gas and Electric where the program is administered by the California Center for Sustainable Energy, formerly the San Diego Regional Energy Office.

EVALUATION OBJECTIVES

Program Administrator Comparative Assessment

- Conduct an independent analysis of the effectiveness of administration styles
- Review administrative processes, marketing and outreach, implications of different approaches, and external variations (e.g., interconnection and air permitting)

Market Focused Process Evaluation

- Review how participants (both completed and withdrawn applicants) experience the program; unique aspects of public entity interface with the program, effect of the application fee, the decline in cogeneration systems, incentive levels relative to the equipment costs, and the impact of the California Solar Initiative (CSI) on the SGIP.

Market Characterization Study

- Assess the market for self-generation technologies while considering various factors that might define a successful installation, such as ease of equipment installation, capacity utilization, and equipment retention
- Identify the success factors that most contribute to program and project cost-effectiveness, and identify which factors undermine cost-effectiveness

Retention Study

- Assess the long-term persistence of impacts from self-generation technologies
- Find the technical degradation factor (time and use related change in efficiency) and the effective useful life (the median number of years that the technologies are still in place and operational)

APPROACH

The following data sources were used for all four studies. The number in parenthesis behind the data source shows the sample size for the focus groups, surveys, and interviews.

- **Program data** as of December 2006
- **Focus groups** with host customers in each Program Administrator's territory (4)
- **Surveys** with host customers (204 active/completed projects; 119 withdrawn/rejected projects) and non-participants (260)

- **In-depth interviews** with Program Administrators, project developers (29), host customers (45), non-participants (25), and CPUC & CEC staff.
- **Informational interviews** with others “external” to the Program
- **Site data**
- **Quantitative analysis** using data regression methods
- Review of applicable literature sources, industry documents & Internet sources

KEY FINDINGS

Program Administrator (PA) Comparative Assessment

- Staffing: PAs approach staffing similarly except SCE which is somewhat leanly staffed
- Processes:
 - > Similar processes as expected in a statewide program
 - > All PAs appear to routinely grant project extensions
 - > PG&E challenged by large territory size, particularly with interconnection
 - > SCE appears to intercede more often on behalf of applicants
 - > CCSE requires all projects to install NGO meters
- Cost drivers/Budget: PAs have roughly similar cost structures
- Marketing/Outreach
 - > PG&E has well organized marketing and outreach efforts
 - > SCE places less emphasis on marketing
 - > SCG has offered incentives to account reps for promotion of SGIP
 - > CCSE explicitly markets the value proposition of SGIP through case studies
- External Variation
 - > PAs limited by ability to address variations “external” to SGIP, such as interconnection, tariffs, air quality and building department issues
 - > Tariffs are most important of the external issues—wide variance of tariff structures between CPUC-regulated IOUs
 - > Air permitting, building construction regulations and interconnection can be significant barriers but were not typically show-stoppers

Source: Cooney, K., P. Thompson, Summit Blue Consulting, Energy Insights, RLW Analytics. “Self-Generation Incentive Program: Program Administrator Comparative Assessment.” Report to the SGIP Working Group. April 25, 2007. Available at http://www.cpuc.ca.gov/PUC/energy/sgip/051005_sgip.htm

Market Focused Process Evaluation

- SGIP and the Market
 - > The SGIP has disbursed over \$403 M in incentives for 234 MW of capacity representing 948 on-site generation projects
 - > Host customers find three factors more compelling in their decision to participate than their non-participant counterparts—utility bill reduction, concern for the environment, and peak demand reduction
 - > Ten market sectors account for most applications (78%) with manufacturing dominating
- Participant Experiences
 - > Overall program satisfaction is high (80% of survey respondents with active/completed projects and 50% of survey respondents with withdrawn/rejected projects were very satisfied or satisfied)
 - > Over time, fewer host customers are completing the forms themselves and relying more on a developer (76% of applicants in 2001 completed the forms themselves; 13% of applicants in 2006 completed the forms themselves)

- > Of those that did have a negative experience, paperwork and bureaucracy were typical complaints
- > Participants and developers complained about frequent changes to the program, making it harder to plan for projects in their budget cycles
- > The dominant reason reported for withdrawing from the SGIP is that system costs relative to rebates are too high (27% of host customers with withdrawn/rejected projects felt this way)
- Public vs. Private Entity
 - > Public entity participation is robust, while private entity participation is beginning to decline
 - > Public entity satisfaction is comparable to private entity satisfaction
 - > Public entities are more likely to complete the forms than their private counterparts
- Application Fees
 - > The institution of the application fee is generally seen by most host customers, developers and PAs as a success in deterring phantom or premature project application, though some developers appear to be taking completion risk and forfeiting their application fees
- Transition Issues
 - > Cogeneration application have been declining due to decreasing incentives, increasing natural gas prices, more stringent air regulations, difficulty in meeting waste heat requirements
 - > With regard to Performance Based Incentive (PBI) and CSI transition, a significant fraction of respondents are concerned that the transition to PBI will not be an improvement, though more are not sure
 - > Because no technology applications using the Program Modification Guidelines process resulted in a program modification, stakeholders are not confident in this approach

Source: Cooney, K., P. Thompson, Summit Blue Consulting, Energy Insights, RLW Analytics. "Self-Generation Incentive Program: Market Focused Process Evaluation." Report to the SGIP Working Group. August 9, 2007. Available at http://www.cpuc.ca.gov/PUC/energy/sgip/051005_sgip.htm

Market Characterization Report

- Definition of a Successful Project
 - > Host customers, and some project developers, define a successful project as one that yields a positive ROI and produces the amount of power that was anticipated
 - > Others define a successful project as one that is paid an incentive
- Drivers of a Successful Project
 - > Project developers say that the most important driver of a successful project is having a thorough understanding of the requirements of the SGIP
 - > Host customers view having realistic assessment of project economics up front so that expectations match reality, installing sound equipment, and the availability of program incentives
- Project Failures
 - > Often associated with the host customers' initial optimistic view of permitting, installation and interconnection and not understanding project factors (such as departing load tariffs) that impact economics
- Success of the SGIP in the Market
 - > Awareness of the program among the general population has increased from 15% in 2003 to 26% in 2007 (as measured by a survey of non-participating host customers)
 - > The program appears to have stimulated new business models including roof-integrated PV systems, vertical integration among project developers, and the growth of leased or outsourced self-generation systems

- > Success is constrained by changes in business demographics, fluctuations in equipment availability and prices, changes in fuel prices, and changes in the payback requirements of customers

Source: Cooney, K., P. Thompson, Summit Blue Consulting, S. McNulty, Energy Insights, RLW Analytics. "Self-Generation Incentive Program: Market Characterization Report." Report to the SGIP Working Group. August 30, 2007. Available at

http://www.cpuc.ca.gov/PUC/energy/sgip/051005_sgip.htm

Retention Study

- Average Output to Capacity Ratio
 - > Ratio of actual energy produced in a given period to the rated capacity
 - > Fuel cells=0.74, Gas Turbines=0.72, Microturbines=0.48, Internal Combustion Engines=0.42, Photovoltaic Cells=0.17, and Wind Turbines=0.15
- Manufacturers and Reliability
 - > No relationship was found between manufacturers and reliability of fuel cells, wind, gas turbines or PV system
 - > There is a relationship between specific manufacturers of microturbines and internal combustion engines that have had low reliability
- Survival Proportion
 - > Ratio of the number of systems that are functional to the total number of systems in the data
 - > Fuel Cells, Wind Turbines, Photovoltaic Cells, Gas Turbines all at 100%, Internal Combustion Engines at 81%, Microturbines at 70%
- Effective Useful Life (EUL)
 - > PV: all are still installed and in operation, insufficient failures to determine EULs
 - > Microturbines: 4.0 years to 6.6 years
 - > Internal Combustion Engines: 3.7 years to 7.2 years
 - > Not estimated for fuel cells, wind turbines, and gas turbines due to the low number of data points
- Practical Functionality
 - > Of all Microturbines and Internal Combustion Engines with zero current metered electricity production – primary self reported reason for lack of function was as follows:
 - 56% reported non-functional was due to mechanical issues
 - 14% reported non-functional due to high gas prices
 - 17% reported to have functional status (operating with mechanical problems)
 - In 14% functionality not identified

Source: Cooney, K., P. Thompson, Summit Blue Consulting, J. Stoops, RLW Analytics, Energy Insights. "Self-Generation Incentive Program: Retention Study." Report to the SGIP Working Group. December 3, 2007. Available at http://www.cpuc.ca.gov/PUC/energy/sgip/051005_sgip.htm