MARKET CHARACTERIZATION REPORT

APPENDIX

SUBMITTED TO:
JENNIFER BARNES
PG&E M&E PROJECT MANAGER
AND M&E COMMITTEE OF 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	Patricia Thompson	Shawn McNulty
kcooney@summitblue.com	pthompson@summitblue.com	SMcNulty@energy-insights.com

1.1 Survey Disposition and Non-Response Issues

Table 1-1, below, summarizes the results of every participant survey contact attempted. Of the 948 attempts to contact a host customer about a specific project, only 26 resulted in firm refusals to participate in the survey (verbally declined or hung up). There was a substantial proportion of contact information that was no longer accurate, e.g., due to changes in personnel or company reorganization, and many unreturned phone calls. Note that the Summit Blue team did attempt to locate correct contact information via the web, and the PAs also were able to provide some updated contact information.

Table 1-1. Participant Survey Disposition Report

	Number of Projects Where Contact Was Attempted				
Result of Contact Attempt	**PG&E**	**SCE**	**SDREO**	**SCG**	**Total**
Completed survey	163	63	28	69	**323**
Verbally declined to participate*	14	3	4	2	**23**
Hung up on interviewer*	0	2	1	0	**3**
Said to call back later**	21	12	4	10	**47**
Took message, but did not return call**	184	55	11	64	**314**
Language barrier***	1	2	0	0	**3**
No one currently with the company qualified to answer***	29	20	4	24	**77**
Busy signal***	8	5	0	4	**17**
No answer***	21	6	1	11	**39**
Wrong number***	22	16	3	18	**59**
Number no longer in service***	16	12	1	14	**43**
Total	**479**	**196**	**57**	**216**	**948**

**These represent a clear refusal to participate in the survey.*
***These may represent a "soft" refusal to participate, or may simply represent scheduling difficulties that precluded their participation during the survey period.*
****These issues effectively prevented the interviewers from reaching the proper respondent and determining if they were willing to be surveyed. Many of these relate to the limitations of the participant contact information available from the program administrators.*

If we were to calculate the response rate for the participant survey as the number of projects surveyed divided by the number of projects where contact was attempted, the overall response rate would be 34%. As a measure of the willingness of host customers to participate in the survey; however, this is inadequate because it fails to account for the cases where bad phone numbers, corporate reorganizations, etc. made it impossible to reach an appropriate respondent.

Excluding those cases marked *** in Table 1-1 yields a more appropriate definition of response rate as the number of projects surveyed divided by the number of projects where some contact with the host customer was made. By this definition, the overall response rate was 45%, ranging from a low of 43% among PG&E projects to a high of 58% among SDREO projects. These rates are comparable to response rates from other telephone surveys, especially in light of the fact that approximately 80% of applicants relied on ESCOs or developers in a significant fashion for SGIP application assistance. [1]

A comparison of the firmographics of responders and non-responders (e.g., SIC, PA territory, size, technology, active vs. withdrawn) found no evidence of systematic biases between these two groups. Of the 23 who verbally refused to complete the survey, 12 provided a reason. Five of these had no interest in participating, three had no time, two had no availability during the survey period, and two cited legal issues. The latter included one host customer who simply referred the interviewer to their attorney and one who mentioned ongoing litigation concerning the project.

1.2 Host Customer Sample Design

Table 1-2 shows the total number of projects in the host customer sample frame, stratified by variables of interest.

[1] In the previous process study on the SGIP, Itron was able to complete the planned interviews with host customers, however the target was an order of magnitude less (32 completes as opposed to 289 customers representing 323 projects in the Summit Blue sample). Itron, CPUC Self-Generation Incentive Study, 2004 Targeted Process Assessment, April 19, 2005. p. 3-3. More recently, ODC completed a survey and attempted to contact 100 people based on a sample frame of 140 completed PV customers but were only able to reach 30. Therefore, Summit Blue's response rate was comparable and survey fatigue within the population is suspected.

Table 1-2. Sample Frame for Host Customer Surveys[2]

	PG&E		SCE		SCG		SDREO		
	Active/ Complete	**Withdrawn/ Suspended/ Rejected**	**Active/ Complete**	**Withdrawn/ Suspended/ Rejected**	**Active/ Complete**	**Withdrawn/ Suspended/ Rejected**	**Active/ Complete**	**Withdrawn/ Suspended/ Rejected**	**Total**
Solar photovoltaics	625	574	161	375	56	149	46	59	2,045
Reciprocating engines/turbines	91	114	14	52	54	63	4	5	397
Microturbines	40	20	12	14	33	28	10	2	159
Fuel cells	9	4	2	3	5	10	0	0	33
Wind	1	5	2	5	1	0	0	0	14
Total	766	717	191	449	149	250	60	66	2,648
By PA	**1483**		**640**		**399**		**126**		

[2] The sample was drawn from all projects as of December 2006. Program participants were not included if they had already been reached by other surveys, such as the California Solar Initiative survey conducted by ODC on behalf of SCE's CSI Program. For further discussion, see Section 2.2.2. In addition, four withdrawn/rejected SCG projects from 2001 for which the technology was not originally listed were excluded from the sampling frame.

Table 1-3 shows the distribution of the 323 host customer surveys by PA, technology, and status.

Table 1-3. Completed Surveys for Host Customers

	PG&E		SCE		SCG		SDREO		
	Active/ Complete	**Withdrawn/ Suspended/ Rejected**	**Active/ Complete**	**Withdrawn/ Suspended/ Rejected**	**Active/ Complete**	**Withdrawn/ Suspended/ Rejected**	**Active/ Complete**	**Withdrawn/ Suspended/ Rejected**	**Total**
Solar photovoltaics	86	20	14	32	10	14	9	11	**196**
Reciprocating engines/turbines	24	15	2	3	18	3	2	3	**70**
Microturbines	9	2	5	3	11	3	3	0	**36**
Fuel cells	6	0	1	1	3	6	0	0	**17**
Wind	0	1	0	2	1	0	0	0	**4**
Total	**125**	**38**	**22**	**41**	**43**	**26**	**14**	**14**	**323**
by PA	**163**		**63**		**69**		**28**		

Table 1-4 shows the breakout of PV surveys completed by coastal and non-coastal. This table along with information from RLW reflects that the team met or came fairly close to meeting most of the coastal/non-coastal goals.

Table 1-4. Completed PV Surveys, by Coastal and Non-Coastal

Program Administrator	Active/Complete				Withdrawn/Suspended/Rejected			
	Coastal	Non-coastal	Unknown	Total	Coastal	Non-coastal	Unknown	Total
PG&E	51	34	1	86	18	1	1	20
SCE	1	2	11	14	16	8	8	32
SCG	4	2	4	10	10	2	2	14
SDREO	4	1	4	9	7	2	2	11
Total	60	39	20	119	51	13	13	77

The sample plan represented a compromise between the desire for large enough sample sizes in each major stratum to yield high levels of statistical confidence and the reality that in many strata the number of projects available for sampling was quite limited. This was particularly true for SCE projects, where the number of available sample points was reduced by an ongoing CSI surveying effort. Project managers for this effort were rightfully concerned about survey fatigue and asked that these customers be eliminated from the SGIP survey. Because many of those host customers were multiple site host customers (e.g., one host customer that received incentives for projects in multiple locations), this had a greater effect on available sample frame than was originally appreciated. As a result, PV surveys in SCE territory are significantly underrepresented in the final survey numbers. Moreover, because the CSI survey effort focused on completed projects, most of the completed SCE PV projects were excluded from the sample frame for the SGIP host customer survey. So, the data captured from SCE PV projects cannot be viewed as representative of all PV active/completed PV projects in SCE territory. To ameliorate this effect, SCE is providing the Summit Blue team with the CSI survey data results. For the most part, the results of this survey are comparable to the findings presented in this report.

Although the nature of the SCE PV sample unquestionably raises concerns about how one should interpret those data points, these concerns have no real bearing on the analyses and conclusions set forth in this report. The reason is that we did not analyze or report results *at the level of a specific technology within a specific PA territory*. The findings for all SCE projects were compared with all PG&E, SDREO, and SCG projects, and the results for all PV projects (across PAs) were compared with the results for other technologies, but it was never the intent to look with statistical rigor at PV projects within SCE territory. The potentially compromised sample cell (active/completed PV projects in SCE territory) accounts for only 7% of all SGIP projects and only 9% of all SGIP PV projects. As such, it is the opinion of the Summit Blue team that the conclusions presented in this report are statistically valid.

The sample design allowed us to cut the resulting data in a variety of ways while maintaining "90/10 confidence" (90% confident that the true value is within ±10% of the estimate) within each cut. Examples of cuts that provided this level of confidence include:

- Projects broken out by PA for PG&E, SCE, and SCG; the confidence level for SDREO projects is +/- 14% at the 90% confidence interval;

- Projects by status (active/completed vs. withdrawn/rejected);

- Projects by technology (PV vs. recip/turbine); and

- PV projects by status.

The smaller number of microturbines, fuel cells, and wind turbine projects available for sampling meant that the Summit Blue team was not able to attain the same level of statistical confidence for these technologies. Likewise, while the Summit Blue team was able to attain 90/10 confidence for recips/turbines as a group, we were not able to attain this level of precision when breaking recips/turbines out by project status.

Because the sample design deliberately oversampled some types of projects in an effort to obtain statistical precision around PA, status, and technology, simply reporting the unweighted survey responses would give a misleading picture of the views of host customers as a whole. To correct for this, we applied survey weights to the data before reporting results. The weight for each host customer was calculated by dividing the number of projects in the appropriate cell of the sample frame by the number of completed surveys in the same cell. For example, because 625 active/completed PV projects by PG&E were available to be sampled and 86 completed surveys with this sub-group, each completed survey in this sub-group was given a weight of 7.3 (625 divided by 86). Essentially, each of these 86 respondents represents seven and a quarter projects of the same PA, technology, and status. When weighted in this fashion, the survey results provide an accurate representation of the likely responses of all SGIP host customers, had it been feasible to survey them all.

Table 1-5 and Table 1-6 show the breakdown of the completed surveys by technology, program administrator, and the type of entity.

Table 1-5. Host Customer Surveys—Active/Completed—204 Surveys Total

Technology	Number of Completed Surveys
PV	119
Ren ICE	4
Ren MT	6
Ren fuel cell	6
Wind turbine	1
Non ren ICE	39
Non ren MT	22
Non ren gas turbine	3
Non ren fuel cell	4
Program Administrator	
PG&E	125
SCE	22
SCG	43
SDREO	14
Type of Entity	
Private	136
Public	68

Table 1-6. Host Customer Surveys—Withdrawn/Rejected/Suspended—119 Surveys Total

Technology	Number of Completed Surveys
PV	77
Ren ICE	4
Ren MT	1
Ren Fuel Cell	4
Wind Turbine	3
Non Ren ICE	19
Non Ren MT	7
Non Ren Gas Turbine	1
Non Ren Fuel Cell	3
Program Administrator	
PG&E	38
SCE	41
SCG	26
SDREO	14
Type of Entity	
Private	83
Public	36

1.3 Details on In-depth Interviews

Table 1-7 lists the project developers interviewed and the number of completed projects by PA.

Table 1-7. Developers Interviewed and Number of Completed Projects by PA

Company Name	PG&E	SCE	SCG	SDREO	Technologies Covered
3rd Rock Systems and Technologies	5			5	PV
Advanced Energy Systems	3				I/C
Alliance Star Energy				1	Fuel cells
Allied Energy Services					I/C (Non Ren fuel), fuel cells, microturbines
California Construction Authority	8	8			PV
California Power Partners	4	5	2	4	Microturbines
Chevron Energy Solutions	18	2	7	3	PV, I/C, fuel cells, microturbines
DER (The Distributed Energy Resource Group)					(I/C, PV, fuel cells, microturbines)
DG Energy Solutions, LLC	1		4	1	I/C
D&J Electric (recently merged with SunTechnics)	4			1	PV
EI Solutions (formerly Prevalent Power)	7	1			PV
Ingersoll-Rand	2				Microturbines
Northern Power Systems	1			1	I/C
Pacific Power Management	13				PV
PowerHouse Energy	1	3	5		Microturbines, I/C
PowerLight Corp.	59	6	11	3	PV
RealEnergy	3	4		2	I/C
Renewable Technologies	8				PV, fuel cells
Solar Power Systems	4				PV
SolarCraft Services	5				PV
SolarGen Properties	1				PV
Spectrum Energy	3				PV
SPG Solar, Inc.	2			1	PV
Sun Edison/New Vision Technologies	3	37	1	7	PV
WorldWater Holdings	2	1	1	3	PV
Total	157	67	31	32	—
Percent of complete projects	35.8	27.6	21.2	26.7	

An overview of the host customers interviewed is shown in Table 1-8[3]

Table 1-8. Host Customer In-depth Interviews by Technology and PA

Technology	Number of Interviews
PV	21
Cogen	18
Other renewables	6
PA	
PG&E	18
SCE	5
SCG	17
SDREO	5

1.4 Focus Group Recruitment Process

Recruitment Process. One focus group facility was reserved in each PA territory. Potential recruitment lists of program host customers were developed that included host customers within a 30-mile radius of the chosen facility. Only those host customers that had a complete or substantially complete project were accepted for recruitment. Calls and e-mails were sent to those on the recruitment list. Prospective host customers were screened to ensure that host customers had sufficient project experience to understand the decision-making process that the host customer's company conducted regarding the program. Host customers were compensated with a cash incentive to participate.[4]

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

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

Public Entity Involvement. During the recruitment process, the team found that contacting host customers involved with public entities was, in general, easier than contacting host customers with private firms. As a result, the representation of public entities in the focus groups was generally slightly higher than in the program (see Table 1-9).

[3] As described in section 2.2.2, the sample frame (from which in depth interviews were recruited) were constrained by the CSI survey, thus the relatively low number of in depth interviews with SCE customers.

[4] At least two host customers in the SDREO focus group did not accept the cash thank-you. Instead, the cash thank-you was donated to a charity of their choice.

Table 1-9. Public Entity Involvement in the Focus Groups

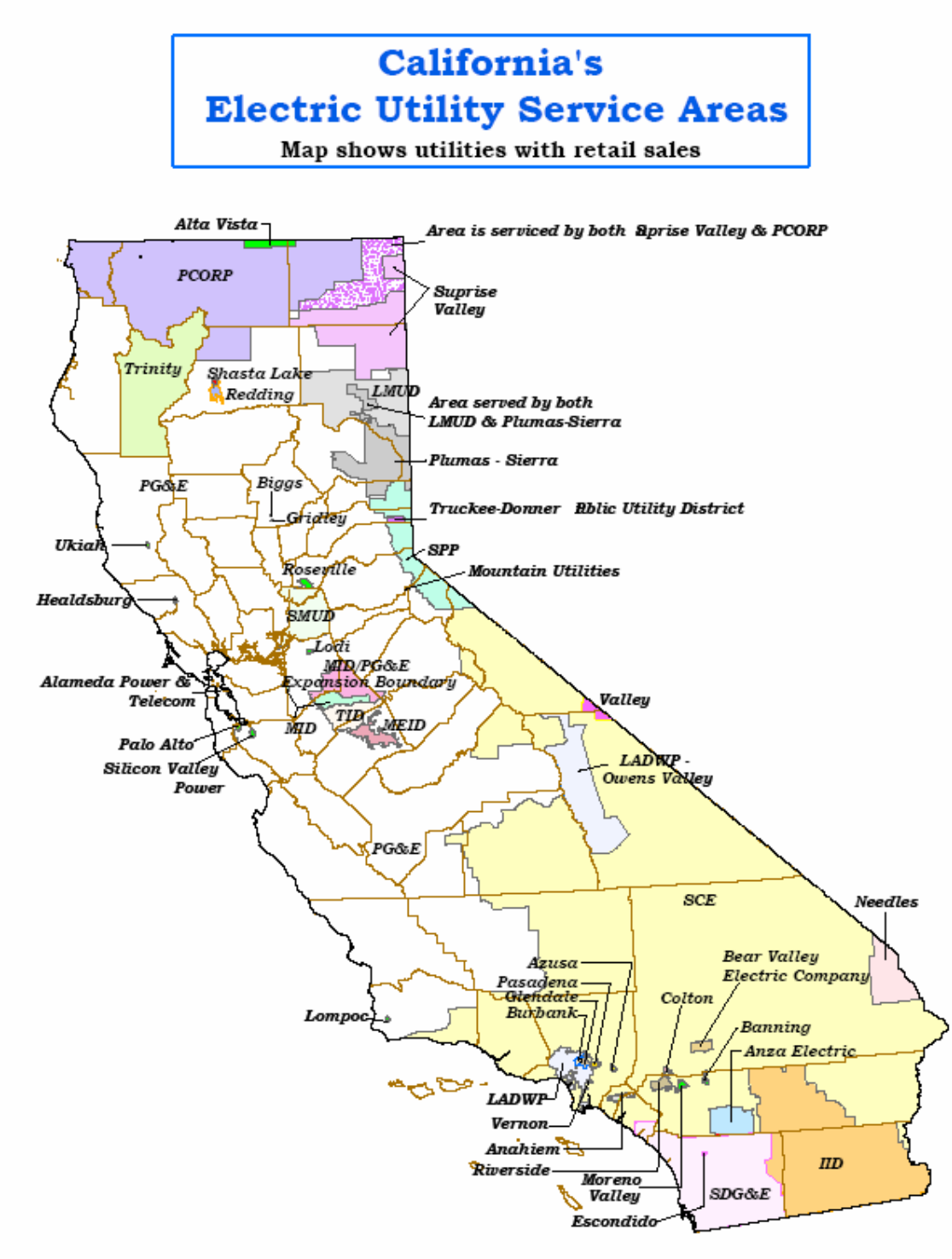
	PAs			
	PG&E	**SCE**	**SCG**	**SDREO**
Completed public entity SGIP *projects*	37%	26%	16%	44%
Public entity focus group *host customers**	33%	25%	29%	58%

** Some host customers represented several projects.*

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

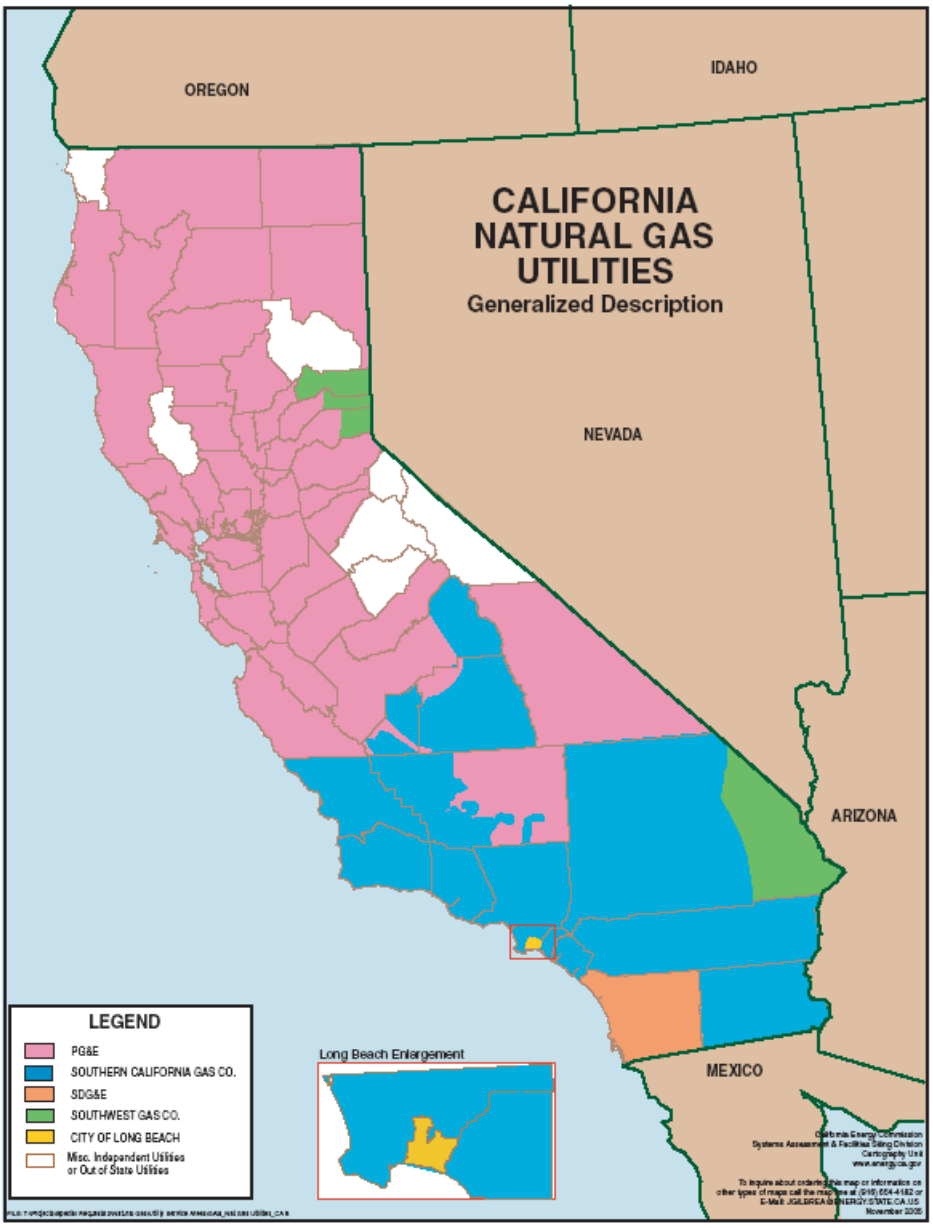
Focus Group Facility Locations. Recruitment lists for each focus group facility location in each PA territory were created and sorted based on host customers whose zip code or city stated in the program records was within approximately a 30-mile radius of the focus group facility location. The focus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

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



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

Figure 1-2. California Natural Gas Utility Service Map



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

1.5 Regression Analysis

To investigate the reasons for the decline in the number of cogeneration applications over time, a regression model was computed with the number of cogeneration applications per month as the criterion variable. Predictors included dummy variables for the years 2002 through 2005, a dummy variable for seasonality (winter), average natural gas price for commercial customers in California, and dummy

variables reflecting the changes in emission regulations, waste heat requirements, and incentives, respectively.

Table 1-10 shows the unstandardized regression coefficients and t-values for each variable in the model. The R-squared for the model was 0.41.

Table 1-10. Regression Coefficients and T-values

	Coefficient	t-value
Intercept	36.1	5.13
Emissions regulations	6.09	0.92
Waste heat requirements	3.77	0.66
Reduction in incentive	-26.29	-2.54
Winter	4.06	1.73
2002	-14.19	-3.36
2003	-12.83	-2.58
2004	-21.22	-2.52
2005	4.19	1.09
Natural gas price	-1.6	-1.46