PY2013-14 Third Party Commercial Program Value and Effectiveness Study Report (Volume II)

California Public Utilities Commission
Energy Division

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Prepared by

Opinion Dynamics Corporation

PY2013-14 Third Party Commercial Program Value and Effectiveness Study Report (Volume II)

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Table of Contents

Opinion Dynamics

Table of Tables

Opinion Dynamics

Table of Figures

1. Introduction to Volume II of PY2013-14 Third Party Commercial Program Value and Effectiveness Study Report

This volume of the report provides detailed chapters with additional findings to support the PY 2013-14 Third Party Commercial Program Value and Effectiveness Study.

Chapter 2 presents the case study research, including the research methodology, detailed findings of each case study, a list of secondary literature and a sample data collection instrument for the participant surveys. Each or the ten case studies begins with a summary of findings and proceeds with more detailed information about the program design, program implementation, and participants' feedback regarding the value and performance of the 3P program.

Chapter 3 provides chapters with program-specific information on all 38 3P Commercial programs included in this study. Each chapter details program characterestics about the target market, measures and services offered, delivery overview, a performance summary including ex-ante savings, program spending and cost effectiveness, value in the marketplace and the implementer's role in program delivery.

In addition to case study findings and program-specific chapters, this volume also includes the in-depth interview guides for IOU program staff interviews and implementation staff interviews in chapter 4.

2. Case Study Research

2.1 Case Study Methodology

This section presents Opinion Dynamics' approach to selecting ten programs for case study research. It first describes our approach to analyze the programs' value proposition, and then outlines how we used the value proposition analysis to select the ten case study programs.

Program Strategy and Value Proposition Analysis

The value proposition of the programs aligned with what the 3P programs were designed to do: (1) generate energy savings in areas the IOUs have not served in the past or have struggled to serve in a cost-effective manner, and (2) test innovative technologies or unique program delivery approaches. Based on secondary data sources and program staff interviews, we started the value proposition analysis by categorizing the 38 3P programs in study into four distinct quadrants based on their target markets and measures offered. Programs with a vertical market strategy cater to a specific sector, whereas programs with a horizontal market strategy serve all types of commercial customers (although some focus on a certain size, i.e. small and medium businesses).

- Quadrant 1: Vertical Markets with Established Technologies: These programs focus on customers in specific sectors including schools, lodging facilities, healthcare facilities and other sectors. These programs intend to help customers overcome common market barriers to energy efficiency upgrades with sector-specific expertise and guidance. Schools, for example, are generally budget- and resource constrained, whereas customers in the healthcare segment face long decision-making processes and sector-specific regulation. Lodging facilities on the other hand vary in size, may or may not be resource constrained but favor low-occupancy times to undergo retrofits. Program implementers have worked in these markets for many years and claim to offer sector-specific expertise that is needed to encourage energy efficiency upgrades. These programs intend to serve specific sectors that lack the knowledge and resources to pursue these more complex upgrades on their own.

- Quadrant 2: Horizontal Markets with Established Technologies: These programs target commercial customers with direct install services or one specific measure or service. The non direct-install programs in this category focus on selling the value of specific measures including HVAC maintenance and retrofits, boiler upgrades, conventional retrocommissioning, efficient lighting for parking garages and ozone laundry interventions. These programs intend to serve commercial customers who lack the knowledge and resources to pursue these more-complex upgrades on their own. These 3P program implementers claim to have the measure-specific technological expertise needed to sell the program measures.

- Quadrant 3: Vertical Markets Focused Innovative Programs: All programs in this group originated through the IDEEA 365 program selection process[1]. This group includes four programs that are testing the concept of using remote data-analytics to identify retrocommissioning opportunities specifically for small and medium sized commercial customers in schools and municipal facilities. This group also

[1] The "Innovative Design for Energy Efficiency Activities 365" program (IDEEA 365), is an IOU solicitation process that provides a platform for bidders to submit proposals for new "targeted" or "innovative" technologies and unique delivery approaches. The first 3P Commercial programs under IDEEA 365 originated in 2013.

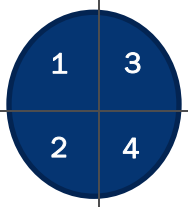
includes Lincus WISE aimed at promoting comprehensive pump overhauls and retrocommissioning in water and wastewater agencies.

- Quadrant 4: Horizontal Markets Focused Innovative Programs: This group includes two programs that are testing the concept of using remote data-analytics to identify retrocommissioning opportunities but do not have a sector-specific focus. This category also includes the LED Accelerator Program that aims to increase saturation of higher efficiency LEDs that are not yet approved by ENERGY STAR. It also includes the SoCalGas Save Gas Program. This program employed a new approach to remotely monitor and manage hot water usage in hotels, senior care facilities, and buildings with onsite kitchen and laundry facilities, but was closed in the program cycle.

Table 1 shows how the 38 programs were categorized into each quadrant.

Table 1. 3P Commercial Value Proposition Quadrants

	Hard-to-Reach Markets with Established Technologies	Innovative Technologies and/or Delivery
Vertical	**Schools** School EE (SCE)*♦ PREPS School EE (PG&E) K-12 Private Schools *♦ Cool Schools ~~CA Preschool EE*~~ **Hospitality** LodgingSavers♦ Lodging EE Casino Green♦ **Healthcare** Healthcare EEE (SCE) Healthcare EE (PG&E) **Other** EnergySmart Grocer* Data Center EE Furniture Store EE*♦ ~~EE for Entertainment Centers~~	**Data-enabled Retrocommissioning in Schools** Enovity SMART▪ Nexant AERCx ▪ PECI AERCx ▪ RSG AERCx ▪ **Pump Overhaul and RCx for Water Agencies** Lincus WISE ▪
Horizontal	**Small- and Medium Businesses** Direct Install (SDG&E)I*♦ RightLights*♦ Energy Fitness*♦ Energy Savers* ~~CoolBiz*~~ **Measure / Service Focus** Boiler EE Air Care Plus* CUBE HVAC Commercial* ~~EE Parking Garage~~ ~~Ozone Laundry EE Program~~ ~~Monitoring-based Persistence Commissioning~~ ~~Monitoring-based Commissioning~~ ~~Enhanced Automation Initiative~~	**Data-enabled Retrocommissioning** Enhanced RCx RCx (SDG&E) **Lighting** LED Accelerator **Hot Water Controls** ~~SaveGas~~



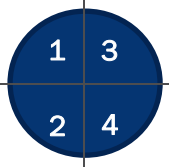
Note: Strikethrough flags programs that closed during the 2013-14 cycle
*Deemed measures only ; ♦ Direct install programs; ▪IDEEA 365

Selection Strategy

We began our selection strategy by removing any programs that closed throughout or a the end of the 2013-14 program cycle. We then examined the remaining number of programs, participants and savings that each quadrant contributed to the total of active programs.

Table 2. Program Activity by Quadrant (amongst active programs)

	Hard-to-Reach Markets with Established Technologies	Innovative Technologies and/or Delivery
Vertical	13 active programs 1,391 participants 510,668 MMBTU reported 50% of total MMBTU	5 active programs* 27participants 12,107 MMBTU reported 1% of total MMBTU
Horizontal	9 active programs 8,548 participants 449,917 MMBTU report 44% of total MMBTU	3 programs 242 participants 44,212 MMBTU reported 4% of total MMBTU



Notes: Participant counts based on unique service account ID in program tracking data. Energy savings based on CPUC Program Database from May 2015.
*Only two programs claimed savings during the 2013-14 program cycle.

Our criteria for selecting the 10 programs were as follows.

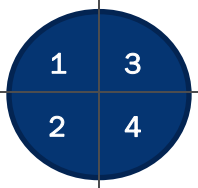
1. Focus on active (not closed) programs with the largest savings (MMBTU)
2. Ensure that all IOUs have at least one program
3. Capture varying sectors, i.e. some that have a vertical focus and some that have a horizontal focus
4. Capture varying delivery models and services offered, i.e. direct install versus technical program assistance programs; retrocommissioning versus retrofit
5. Capture programs with varying value propositions, i.e. hard-to-reach versus newer/innovate programs.

The programs we selected for case studies are highlighted in yellow in Table 3. This strategy ensures that at least one program is selected from each quadrant. Following Table 3, we describe our approach to selecting these ten programs for each quadrant in detail. In total, these 10 selected programs represent the following:

- 59% of the reported MMBTU savings (599,386/1,016,9230)
- 69% of the participants in the claimed savings database (Itron through Q8) (6,997/10,208)
- Proportional representation of each quadrant based on savings to the total (while also ensure that at least one program from each Quadrant is selected) which translates to five programs from Quadrant 1, three programs from Quadrant 2, one program from Quadrant 3 and one from Quadrant 4.

Table 3. Programs Selected for Case Studies by Value Proposition Quadrant (amongst active programs)

	Hard-to-reach Markets or Technologies	Innovative Technologies and/or Delivery
Vertical	**Schools** School EE (SCE)*♦ PREPS School EE (PG&E) K-12 Private Schools *♦ Cool Schools **Hospitality** Lodging EE LodgingSavers♦ Casino Green♦ **Healthcare** Healthcare EE (SCE) Healthcare EE (PG&E) **Other** EnergySmart Grocer* Data Center EE Furniture Store EE*♦	Data-enabled Retrocommissioning in Schools Enovity SMART ▪ Nexant AERCx ▪ PECI AERCx ▪ RSG AERCx ▪ **Pump Overhaul and RCx for Water Agencies** Lincus WISE ▪
Horizontal	**Small- and Medium Businesses** Direct Install (SDG&E)*♦ RightLights*♦ Energy Fitness*♦ Energy Savers* **Measure / Service Focus** Boiler EE Air Care Plus* CUBE HVAC Commercial*	**Data-enabled Retrocommissioning** Enhanced RCx RCx (SDG&E) **Lighting** LED Accelerator **Hot Water Controls**



Note: Programs Chosen for Case Studies are Highlighted in Yellow and are listed from highest total savings (MMBTU) to lowest under each subcategory. Strikethrough flags programs that closed during the 2013-14 cycle
*Deemed measures only; ♦ Direct install programs; ▪ IDEEA 365

Quadrant 1 Rationale

Table 4 summarizes the rationale for the five programs selected from Quadrant 1. These five programs:

- Provide a mix of direct install and customized/technical assistance strategies the school sector
- Represent at least one program from each sector in the Quadrant
- Represents 61% of savings and 60% of the participants from this Quadrant

Table 4. Quadrant 1 Case Study Program Selection Summary (amongst active programs)

Vertical Sector Focus	Program	IOU	Installed MMBTU (Based on IOU Monthly Energy Efficiency Program Report Dec 2014)	Enrolled Participants (ITRON Q8)	Selected for Case Study and Rationale
Schools	School EE	SCE	64,483	188	Largest energy saver and participant count
	3P-PREPS	SCG	39,745	39	2nd Largest saver and only SCG program
	School EE	PGE	28,953	117	
	K-12 Private	PGE	11,613	83	
	Cool Schools	SCE	7,428	1	
Hospitality	LodgingSavers	PGE	48,918	207	Large energy saver and highest participant count
	Lodging EE	SCE	51,304	25	
	Casino Green	PGE	10,597	12	
Healthcare	Healthcare EE	SCE	43,428	8	Largest energy saver
	Healthcare EE	PGE	32,317	7	
Other	EnergySmart Grocer	PGE	113,261	394	Largest energy saver
	Furniture Store EE	PGE	31,816	304	
	Data Center EE	SCE	26,825	6	
Total	All programs above	All	510,688	1,391	

Quadrant 2 Rationale

Table 5 summarizes the rationale for the three programs selected from Quadrant 2. These three programs:

- Provide mix of direct install and tech assistance strategies
- Represent the two largest direct install programs with a horizontal focus
- Include the largest measure-focused program with a horizontal focus
- Represents 57% of savings (MMBTU) and 67% of the participants from this Quadrant

Table 5. Quadrant 2 Case Study Program Selection Summary (amongst active programs)

Target/Type	Program	IOU	Installed MMBTU (Based on IOU Monthly Energy Efficiency Program Report Dec 2014)	Enrolled Participants (ITRON Q8)	Selected for Case Study and Rationale
Small/Med business target with multiple measures or direct install lighting	Direct Install	SDGE	83,243	5,016	Largest Energy Savings
	RightLights	PGE	54,910	838	2 Largest Energy Savings
	Energy Fitness	SDGE	34,157	626	
	Energy Savers	PGE	17,509	305	
Measure or Service Focused to all types of commercial customers	Boiler EE	PGE	117,716	53	Largest Energy Savings
	Air Care Plus	PGE	64,975	471	
	CUBE	SCE	43,495	9	
	HVAC Commercial	SDGE	33,913	1,230	
Total	All Programs Above	All	449,917	8,548	

Quadrant 3 Rationale

Table 6 summarizes the rationale for the one program selected from Quadrant 3. We selected one program from this quadrant because most programs do not have savings or participants reported to date. These are new programs that were ramping up during 2014. The selected program represents 95% of savings and 67% of the participants from this quadrant.

Table 6. Quadrant 3 Case Study Program Selection Summary (amongst active programs)

Target/Type	Program	IOU	Installed MMBTU (Based on IOU Monthly Energy Efficiency Program Report Dec 2014)	Enrolled Participants (ITRON Q8)	Selected for Case Study and Rationale
Data Enabled Retrocommissioning in Schools & Municipal Facilities	Enovity SMART	PGE	11,472	18	Largest Energy Savings
	Nexant AERCx	PGE	635	9	
	PECI AERCx	PGE	0	0	
	RSG AERCx	PGE	0	0	
Pump Overhaul and RCs for Water Agencies	Lincus Wise	PGE	0	0	
Total	All Programs Above	All	12,107	27	

Quadrant 4 Rationale

Table 7 summarizes the rationale for the one program selected from Quadrant 4. We selected one program from this quadrant with the largest savings reported to date. This program represents 50% of savings and 98% of the participants from this quadrant.

Table 7. Quadrant 4 Case Study Program Selection Summary (among active programs)

Target/Type	Program	IOU	Installed MMBTU (Based on IOU Monthly Energy Efficiency Program Report Dec 2014)	Enrolled Participants (ITRON Q8)	Selected for Case Study and Rationale
Lighting	LED Accelerator	PGE	22,210	236	Largest Energy Savings
Data Enabled Retrocommissioning	Enhanced RCx	SCE	15,528	3	
	RCx	SDGE	6,474	3	
Total	All Programs Above	All	44,212	242	

2.2 Case Study Findings

This section presents the detailed findings of each case study, which included a participant survey, a literature review, program data analysis, and a review of program materials. Each case study begins with a summary of findings and proceeds with more detailed information about the program design, program implementation, and participants' feedback regarding the value and performance of the 3P program.

The ten 3P programs represent the diverse sectors targeted by 3P programs and the diverse measures/services offered by each program. The case study programs, in order of appearance, are:

- EnergySmart Grocer
- Lodging Savers
- Healthcare Energy Efficiency
- School Energy Efficiency
- Resource Efficiency in Private and Public Schools (PREPPS)
- EnovitySMART
- Commercial Direct Install
- RightLights
- Boiler Energy Efficiency
- LED Accelerator

2.2.1 EnergySmart Grocer

Summary of Findings

Below are key take-aways from case study findings related to PGE&E's PY2013-14 EnergySmart Grocer Program.

Program Characteristics & 2013-14 Performance Statistics

- This program targets supermarkets and big box stores. The literature review findings in the case study fully aligned with the market barriers that this program is attempting to address.
- The program achieved ex ante energy savings of 40,595 MWh, 4.7 MW and 199,226 Therm, The combined savings (MMBTU) represent 13% of all active 2013-14 3P Commercial programs. The program's energy savings exceeded electric energy and demand forecasts but fell slightly short of gas savings (87% of forecast).
- The program reached 395 participants with an average spending of $32,067 per participant.
- The program's conversion rate from audits to completed projects was strong at 77%.

Participant Feedback on Value and Effectiveness

The table below summarizes the key take-aways from exploring the value of the program's design features in prompting grocers to install energy efficiency measures. It also summarizes the implementer's effectiveness in delivering those services from the participant perspective.

Survey Topics	Participant Feedback		Program Implications
Core Technical Assistance Features(a)	Data indicate these are highly needed	Data indicate the implementer is highly effective at delivering these features	No action needed
Contractor Assistance Features (b)	Data indicate these are moderately needed	Data indicate the implementer is highly effective at delivering these features	No action needed given that these are optional services based on need/interest
Financial Assistance (Rebate)	Data indicate this is highly needed	Data indicate the rebate level is highly effective	No action needed
Performance and Value Alignment	Value and performance aligned well		No action needed
Participant Need for Other Program Features	▪ 62% describe current design as sufficient ▪ Most common suggestion was additional post-project communication to help track energy savings with recommendations on ways to save		No action needed
Likelihood to Recommend Program	95% would recommend the program		No action needed
Major Challenges During Participation	None		

(a) Audit/Identify Energy Savings, 360 Project Assistance, Sector Expertise, Economic Analysis, Equipment Recommendations
(b) Contractor Identification, Contractor Bid Review

Program Design

EnergySmart Grocer is designed to generate electric and gas savings from supermarkets or big box stores in Pacific Gas and Electric's (PG&E) service territory. The program began in 2006 when there was no refrigeration program targeting this customer segment. According to program implementation staff and program documents, grocers use complex refrigeration systems but lack the time, knowledge, and trust in contractors to make energy efficiency upgrades on their own. Program staff further indicated that grocers are reluctant to pay for capital expenditures or interrupt store operations because their businesses commonly run on a small profit margin.

> *Many … improvements are quite expensive and, without having someone to provide a payback analysis or understanding how this is going to help them long term, it is really hard for grocers to want to commit to any type of long-term payback measure [without understanding] how they are going to reap the benefits. [An] analysis of … how the savings will translate directly to cost reduction on their utility bill, and then how long they can anticipate the payback to be … is a major factor. I don't think grocers have a lot of time to do that analysis themselves. – Program Implementation Staff*

To help overcome these barriers for energy efficiency upgrades, EnergySmart Grocer provides facility audits and technical support to assist with calculating the project's return on investment (ROI). The program implementer, CLEAResult, employs a model called *Inform to Invest*. The program starts by introducing customers to short-term, deemed turnkey measures with a high payback. Upon realizing the benefits from turnkey measures, the program encourages grocers to pursue more-complex retrofits. The implementer therefore claims that long-term relationships with grocers are critical to maximize energy savings in this sector.

The program has traditionally focused on medium to large grocery stores, but recently has increased its scope to convenience stores that may have some refrigeration, such as Walgreens and RiteAid.

A literature review on the topic of energy efficiency in grocery stores confirmed the hard-to-reach nature of this customer segment. The literature review identified the following barriers to implementing energy efficiency upgrades in grocery stores.

- **Access to capital/upfront cost.** Several reports cited the high upfront cost of refrigeration upgrades as one of the top barriers to grocers pursuing energy efficiency projects (Haskard 2012; Little 1996; Navigant Consulting, Inc. 2009; Quantum Consulting Inc. 2004). Stores generally require a payback of capital investments within 2–3 years, some even within 1 year (Little 1996; Navigant Consulting, Inc. 2009).

- **Lack of trust in new technology.** One report highlighted that grocers are reluctant to change their refrigeration technology because refrigerated goods represent approximately 45% of supermarket sales. The report explains that "new technologies will have to be field tested and proven … to show reliability before deploying the new technology widely" (Navigant Consulting, Inc. 2009). Two reports further elaborated on the barriers for smaller stores. Haskard (2012) cited that owners of small stores focus on revenue and keeping equipment running to keep product marketable. Summit Blue Consulting (2008) found that smaller grocery stores lack the compatible refrigerated display cases to pursue energy efficiency upgrades.

- **Lack of energy efficiency knowledge.** Two reports indicated that the purchase of refrigeration equipment is merchandising-based and selected for the purpose of selling products contained in the units—not for their energy efficiency. As a result, grocery store managers or owners tend not to consider energy efficiency in these purchase decisions (Little 1996; Summit Blue Consulting, Inc. 2008).

- **Other budget priorities.** Several reports indicated that marketing and product presentation tactics were more important than energy-efficient design (Little 1996; Navigant Consulting, Inc. 2009; Quantum Consulting Inc. 2004).

The program completed projects with 395 customers (defined by unique service account ID) throughout 2013-14, and reached 103% of electric savings goal based on savings data (ex ante) from the CPUC's Program Database.

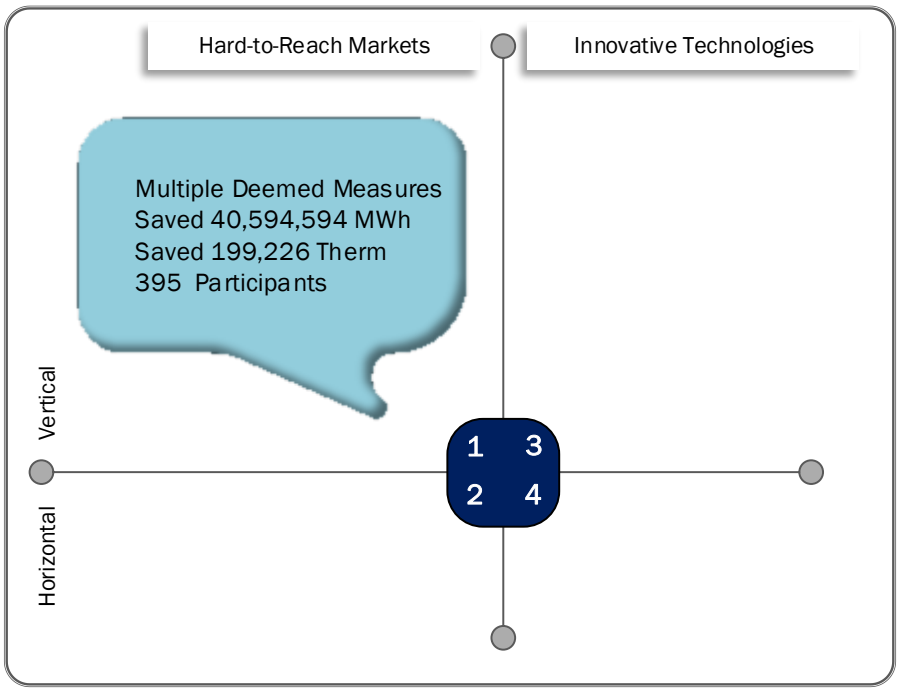
Table 8. EnergySmart Grocer Performance Statistics

	Spending	kWh	kW	Therm
Goal (a)	$10,762,259	39,222,095	4,142	230,060
Actual	$12,666,511(b)	40,594,594 (b)	4,685 (b)	199,226 (b)
% Goal Achieved	118%	103%	113%	87%
Actual per Participant (n=395)	$32,067	102,771	12	504

(a) IOU Monthly Energy Efficiency Programs Report from December 2014.
(b) CPUC's Program Database, version from 11-02-2015

Figure 1 summarizes some of the program's characteristics. The program targets a specific vertical sector—grocery and big box stores—and is therefore placed in Quadrant 1.

Figure 1. EnergySmart Grocer Characteristics



Implementation

The program implementer is involved in all implementation steps except the measure installation, which the participants' contractors perform. In particular, the implementer conducts the following activities:

- Customer outreach
- Free energy audit/assessment using CLEAResults proprietary EnergySmart Grocer software
- Verification and quality assurance/quality control (QA/QC): CLEAResult performs a post-inspection on about 85% of its projects; PG&E inspects around 5%
- Rebate processing
- Collection of customer feedback via email survey

Figure 2 outlines the key implementation activities involved from the first step of finding customers to the final step of completing an energy efficiency project.

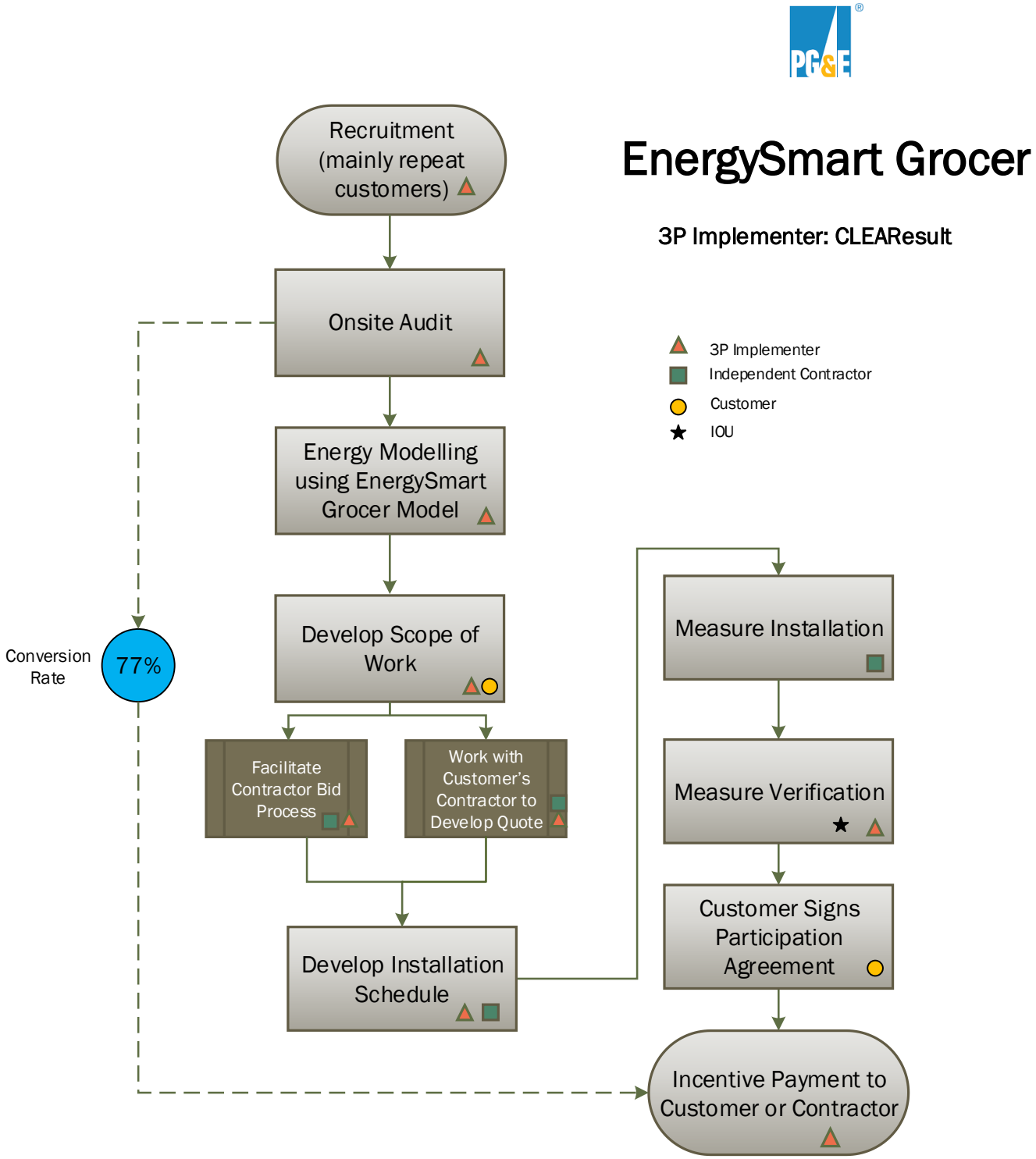
Marketing efforts are limited because the program has matured and focuses on pursuing more-comprehensive retrofits and deeper energy savings with repeat participants. According to the implementer, new participants tend to hear about the program via word of mouth from their service contractor or other grocery stores. However, the program conducted more marketing when it first began in 2006, when CLEAResult would cold call grocers and try to identify the decision maker, usually a facility manager or dedicated energy manager if it was a large chain. According to the implementer's tracking data, the conversion rate from project audits to completed projects was 77% for 2013–14.

> *The grocers we work with today mostly have known us for at least 2 or 3 years, if not more. So we are not finding a lot of new grocers who have not heard of our program. – Program Implementation Staff*

In terms of coordination with other programs, implementation staff refer customers to PG&E's on-bill financing (OBF) and help grocers the OBF application process. However, the program does not coordinate with PG&E's Core programs, other energy efficiency programs, or Local Government Partnerships (LGPs). In our participant survey, 29% (6 of 21) reported that the implementer referred them to resources or rebates.

> *I think without our program, grocers would not be signing up for that [on-bill financing] option. We have seen a lot of success with that program and have been able to get a lot of projects through that program. The process is really confusing to an outside party. I don't think a customer would be able to navigate the application process that is in place in order to obtain those funds without our help…So we have developed this new role as facilitator of on-bill financing. – Program Implementation Staff*

Figure 2. EnergySmart Grocer Implementation



Participant Feedback on Program Value and Effectiveness

The evaluation team identified 394 unique service account IDs for EnergySmart Grocer in the CPUC's Program Database from May 2015.[2] However, the data review revealed several duplicate contact names or phone numbers because some individuals participated with multiple store locations. For fielding this survey, we removed these duplicate entries and established a sample frame of 101 unique participants defined by phone and contact name.

Trained staff of the Opinion Dynamics phone bank called the entire sample and completed 21 interviews for a completion rate of 21%. These 21 respondents presented 16% of sites defined by unique address and 11% of total energy savings (MMBTU) in the sample.

Value

Table 9 presents the key program features designed to help grocers make energy efficiency improvements. The table also shows how many participants did not recall receiving a given feature.

Most participants received all program features. However, almost one-third (29%) reported that they did not use the program implementer to find a contractor or to review contractor bids.

Table 9. EnergySmart Grocer Program Features

Program Feature	Survey Wording	Did Not Receive Feature (n=21)
Audit/Identify Energy Savings	Help to identify energy saving opportunities at your business	0%
360 Project Assistance	Someone to assist with all aspects of the project from beginning to end	0%
Sector Expertise	Advice from someone who is knowledgeable about energy efficient equipment for grocery stores	0%
Economic Analysis	Help to calculate the costs and payback of the recommended equipment	5%
Rebate	Financial assistance to help offset project costs	10%
Equipment Recommendations	Help to select the right equipment to save energy	14%
Contractor Identification	Help with finding a contractor	29%
Contractor Bid Review	Help reviewing contractor bids	29%

Participants who recalled receiving a given program feature rated its importance on a scale of 0 to 10, where 10 represents high importance or "critically needed" to upgrade to more energy-efficient equipment. Table 10 presents the distribution of participant scores, as well as the average importance score for each program feature.

Participants highly valued most core features, with average scores of 7 or above. The high scores for program features that leverage the implementer's technical assistance underpin the market barriers identified above, mainly grocers' lack of knowledge to assess and trust energy-efficient technology. Survey findings also indicate a strong need for financial incentives in the target market; in addition to giving the second highest importance

[2] The evaluation team used the CPUC's Program Database from May 2015 to develop the survey sample. This database version included claims from January 2013 to December 2014, but was not the final database for the 2013-14 cycle. As a result, we identified 394 unique service account IDs when developing the sample, but 395 in the final program database used to capture the total number of participants in the Program Design section.

score to the rebate, three-quarters (76%) described the project costs or lack of capital as a key barrier to pursuing energy efficiency upgrades.

Participants who received help in identifying contractors or reviewing contractor bids had mixed opinions about the importance of these optional features. Of the 15 participants who received these services, 6 rated both features as highly important, with scores of 7 or higher. This indicates that a significant subset of participants (29% of 21) still needs these services and suggests that the program's strategy to offer optional contractor bid review and identification is appropriate.

Table 10. EnergySmart Grocer Importance Scores

Program Feature		Importance Score (a)				Mean Importance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	Sector Expertise (n=21)	0%	10%	5%	86%	8.3	2.3
	Rebate (n=19)	0%	5%	11%	84%	8.2	2.5
	360 Project Assistance (n=21)	0%	5%	10%	86%	8.0	1.7
	Audit/Identify Energy Savings (n=21)	0%	5%	19%	76%	7.9	2.0
	Economic Analysis (n=20)	0%	10%	20%	70%	7.6	2.9
	Equipment Recommendations (n=18)	0%	11%	11%	78%	7.5	3.0
	Overall Mean Importance Score					**7.9**	
Optional	Contractor Bid Review (n=15)	0%	33%	27%	40%	5.2	3.4
	Contractor Identification (n=15)	0%	40%	20%	40%	4.9	4.2

(a) Scale: 0–10, where 0 is "not needed at all" and 10 is "critically needed" in order to upgrade to more energy-efficient equipment. Mean importance scores do not include "Don't Know" responses.

Effectiveness

Table 11 presents the same program features designed to help grocery stores make energy efficiency improvements. The table shows how participants rated the implementer's performance of each feature on a scale from 0 to 10, where 10 represents excellent performance. Participants consistently gave high performance scores for all core program features, indicating that the implementer provides high-quality services.

Table 11. EnergySmart Grocer Performance Scores

Program Feature		Performance Score (a)				Mean Performance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	Economic Analysis (n=20)	0%	0%	0%	100%	9.0	0.9
	Sector Expertise (n=21)	0%	0%	10%	90%	8.8	1.5
	Equipment Recommendations (n=18)	0%	0%	17%	83%	8.6	1.7
	Audit/Identify Energy Savings (n=21)	0%	0%	5%	95%	8.5	1.2
	360 Project Assistance (n=21)	0%	0%	5%	95%	8.5	1.1
	Rebate (n=19)	0%	0%	16%	84%	8.4	1.6
	Overall Mean Performance Score					**8.6**	
Optional	Contractor Identification (n=15)	0%	7%	7%	87%	7.7	2.5
	Contractor Bid Review (n=15)	0%	13%	20%	67%	6.9	3.2

(a) Scale: 0–10, where 0 is "very poor" and 10 is "excellent." Mean importance scores do not include "Don't Know" responses.

When asked if any additional program features are needed, nearly two-thirds of participants (62%) said that the current program design was sufficient. Among those who suggested additional services, three participants recommended providing a more detailed follow-up, including an outline of next steps or a report that shows the progress on energy savings. Other participants suggested additional program measures for their parking lot, incentives for 4' and 6' lights, removing the annual project limit so that grocers can do more upgrades at once, and larger rebates (each mentioned by one participant).

Consistent with high performance scores, almost all participants (95%) said that they would recommend the program to other grocers. The one participant who would not recommend the program to other grocers explained that it is easier to replace equipment at his own pace rather than changing everything at once. The other participants who would recommend the program described the program as a good way to save money or to use financial incentives to upgrade to more energy-efficient equipment.

> *The program helped us save money and helped improve overall use of energy. Financially and environmentally, it is a smart decision. – Participant*

> *When they ran the numbers for us, the savings on our power bill was in excess. So it was a cost-effective no-brainer. I couldn't be happier. – Participant*

> *Because it absolutely helps you to save money and upgrade to more efficient equipment. – Participant*

Some participants also highlighted the implementer's technical assistance and expertise when asked why they would recommend the program.

> *I think the service was excellent. We learned a lot and the payback was almost exactly what they identified. – Participant*

> *They had a long enough relationship with us that they understood our community and demographics. We are a very remote and rural area. We think about things differently … and they were knowledgeable. – Participant*

Table 12 summarizes the reasons why participants would recommend EnegySmart Grocer.

Table 12. Participants' Reasons to Recommend the Program to Other Grocers

Reasons	Percent (n=20)
Energy/Bill Savings	60%
Rebate for Equipment Upgrades	20%
Technical Assistance/New Information	15%
Environmental Footprint	15%
Other	10%

Note: Multiple responses; n=20 because one respondent would not recommend the program.

Even though satisfaction with the program was high, one-fifth of participants (19%, or 4 of 21) experienced some challenges during project implementation. Two participants pointed to issues with the installation or remodeling, one had difficulties getting approval for the financial assistance, and one participant explained that the rebate was lower than anticipated. However, these challenges did not deter them from recommending the program to other grocers.

2.2.2 LodgingSavers

Summary of Findings

Below are key take-aways from the case study findings related to PG&E's PY2013-14 LodgingSavers program.

Program Characteristics

- This program targets customers in the hospitality industry, such as individually-owned businesses, small chains, and some larger hotels. The literature review findings in the case study fully aligned with the market barriers that this program is attempting to address.
- The program achieved ex ante energy savings of 13,045 MWh, 3.8 MW, and 9,592 Therm. The combined savings (MMBTU) represent 6% of all active 2013-14 3P Commercial programs. The program's energy savings exceeded electric and gas savings forecasts.
- The program reached 207 participants with an average spending of $47,336 per participant.
- The program's conversion rate from audits to completed projects was moderate at 67%.

Participant Feedback on Value and Effectiveness

The table below presents key take-aways from exploring the value of program design features in prompting hotels to install energy efficiency measures. It also summarizes the implementer's effectiveness in delivering those services from the participant perspective.

Survey Topics	Participant Feedback (c)		Program Implications
Core Technical Assistance Features (a)	Data indicate these are moderately needed	Data indicate the implementer is highly effective at delivering these features	Findings indicate diverse needs in the target market; better targeting may be needed
Financial Assistance (Co-Pay/Free Measures)	Data indicate this is moderately needed	Data indicate the rebate level is highly effective	
Contractor Assistance Features (b)	Data indicate low need for these features	Data indicate the implementer is moderately effective at delivering these features	No action needed given that these are optional services based on need
Optional Direct Install Feature	Data indicate this is highly needed	Data indicate the implementer is highly effective at delivering direct install services	No action needed
Performance and Value Alignment	Value and performance aligned well		No action needed
Participant Need for Other Program Features	57% describe current design as sufficient Most common suggestion was rebates for additional measures (LEDs, bedroom or parking lot lighting, programmable thermostats) & more product information		Need more communication; Consider additional measures if they align with state program goals
Likelihood to Recommend Program	94% would recommend the program; two participants would not recommend due to lack of energy savings		Need better communication about energy savings & encourage deeper saving measures
Challenges During Participation	Some issues with product quality, work quality and scheduling but all said program resolved the issues		

(a) Audit/Identify Energy Savings, 360 Project Assistance, Sector Expertise, Payback Analysis, Product Recommendations
(b) Optional Contractor Identification, Optional Contractor Bid Review

Program Design

PG&E's LodgingSavers program is designed to generate electric and gas savings from customers in the hospitality industry. According to program implementation staff and program documents, more than 90% of the 15,000 hotels in PG&E's service territory are individual businesses or small chains with an annual electric peak demand below 200kW. These customers typically lack the resources (monetary, personnel, or energy efficiency knowledge) to research energy-efficient upgrades and vet technology or contractors on their own. According to the implementer, these customers also prioritize upgrades related to the décor, amenities, or in-room lighting instead of making more holistic energy-saving upgrades to their infrastructure.[3]

LodgingSavers helps overcome these barriers to energy efficiency upgrades by offering a comprehensive site inspection that identifies recommended upgrades, total project costs, total incentives, the customer co-pay, simple payback, and bottom-line costs to the customer. The program also provides technical expertise to help analyze available upgrade options and works with program-vetted and non-program contractors so that participants can be confident that they are choosing the right technology and that the job will be done correctly. From the implementer's perspective, an additional benefit of this program is that technical assistance establishes trust and builds long-term relationships where customers know that they have somewhere to turn if needs arise in the future. While financial incentives align with rebates in PG&E's Core programs,

[3] The program implementer estimates that more than 95% of small and medium properties in the lodging industry were constructed pre-1990.

LodgingSavers participants face no upfront costs, as the program pays the rebate directly to the contractor so that the participant is only responsible for the difference (co-pay).

While PG&E's Core program is geared toward large customers, LodgingSavers serves mainly individually owned facilities or franchises with direct install turnkey measures and fewer large hotels with comprehensive energy efficiency solutions. For large customers especially, program implementation staff highlighted that handholding is critical to drive participation and encourage larger projects.

> *Third party [implementers] are trying to get as much energy savings as they can. They provide the technical assistance that helps to identify [measures]. They put the whole package together, the calculations, they run it through the whole process…. Walking it through the process and bringing all the documents together, providing the calculations, the handholding I believe helps drive more customers to participate and to do more than they otherwise would have done. – PG&E Program Management Staff*

A literature review on the topic of energy efficiency in the hospitality industry confirmed the hard-to-reach nature of this customer segment. The literature review identified the following barriers for lodging facilities to implementing energy efficiency upgrades.

- **Lack of financial resources and upfront costs.** Several reports indicated that initial costs are a large barrier to investments in energy-efficient equipment (ECONorthwest 2011; Factors and Initiatives Affecting Energy Efficiency in the Hotel Industry 2011; Guevarra 2012; Guilfoyle and Matenaer n.d.). One report further cited constrained capital budgets and highlighted that "hotel operators don't seem to look beyond the initial costs of energy management investments, or consider the total lifecycle costs of existing conditions and the savings that could be realized over the same period" (Guevarra 2012). Another report also highlighted that customers in the hospitality industry prioritize "aesthetic improvements and luxury amenities" over energy-saving upgrades (ECONorthwest 2011).

- **Fear of compromising guest comfort.** One report indicated that customers in the hospitality industry are reluctant to pursue energy management solutions out of fear of impairing guest comfort, as guest satisfaction is their number one priority. The authors noted "…any system or program that even remotely might compromise that standard will be rejected, even if there are energy savings to be had" (Guevarra 2012).

- **Lack of awareness.** One report indicated that some customers in the hospitality industry believe that "compliance with laws and local standards is enough to make their facilities environmentally responsible" (Factors and Initiatives Affecting Energy Efficiency in the Hotel Industry 2011).

- **Paperwork required for utility programs.** One report that surveyed hospitality customers who participated in PG&E's 2006–08 Core programs also discussed "paperwork, delays, and other potential hassles" as potential barriers to taking advantage of Core program offerings (ECONorthwest 2011). However, less than one-fifth of the respondents described the program paperwork as a moderate or minor concern; the majority did not consider this a barrier to participate in Core programs.

- **Difficulty finding qualified contractor/technicians.** One report noted that approximately one-fifth of the customers who work in the hospitality industry and participated in PG&E's 2006–08 Core programs aired moderate or minor concerns about finding qualified contractors for the installation work equipment maintenance (ECONorthwest 2011).

Findings from the literature review align partially with the barriers to energy efficiency upgrades identified by program participants. Almost one-third (29%) cited financial reasons, and one-fifth (17%) explained that they lack the knowledge to identify or verify energy savings potential. Others pointed to a difficult approval process (9%), inconveniences related to upgrades (6%), unsuitable buildings (6%), and a lack of product availability (6%). Although the majority of participants highlighted barriers to pursue energy efficiency upgrades, one-third (34%) said that they generally do not face major barriers, indicating diverse needs in the hospitality industry.

LodgingSavers completed projects with 207 customers (defined by unique service account ID) throughout 2013–14, and reached nearly 150% of its kWh savings goal based on ex ante savings in the CPUC's Program Database.

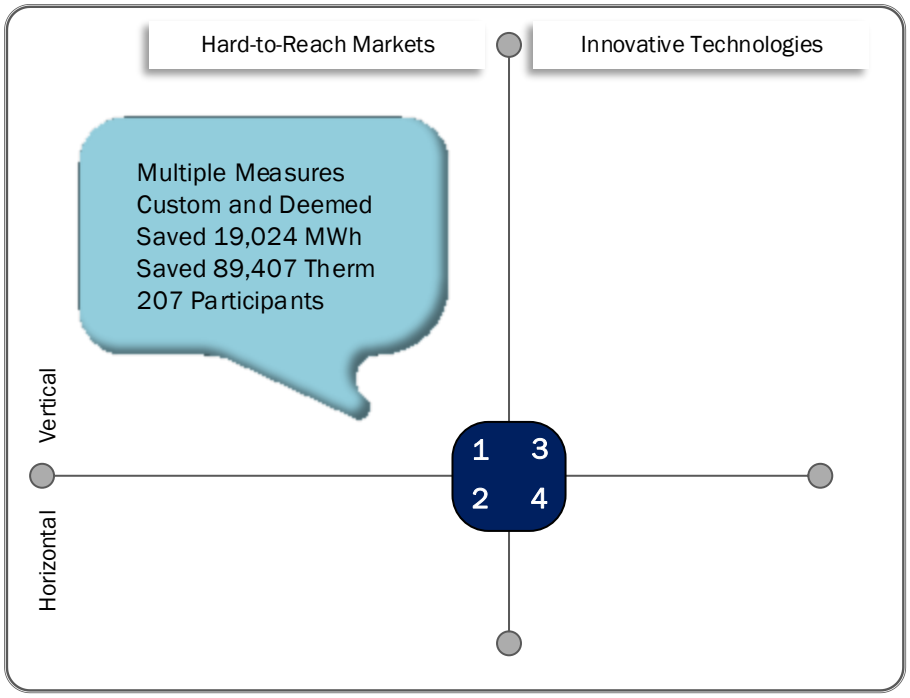
Table 13. LodgingSavers Energy Efficiency Performance Statistics

	Spending	kWh	kW	Therm
Goal (a)	$6,542,368	13,045,130	3,766	9,592
Actual	$9,798,604 (b)	19,024,346 (b)	5,551 (b)	89,407 (b)
% Goal Achieved	150%	146%	147%	932%
Actual per Participant (n=207)	$47,336	63,020	18	46

(a) IOU Monthly Energy Efficiency Programs Report from December 2014.
(b) CPUC's Program Database from 11-02-2015.

Figure 3 summarizes some of the program characteristics. The program targets hard-to-reach customers in the hospitality sector and is therefore placed in Quadrant 1.

Figure 3. LodgingSavers Program Characteristics



Implementation

The program implementer delivers the program from marketing and outreach to incentive payment, but is generally not involved in the installation process. In particular, the implementer conducts the following activities:

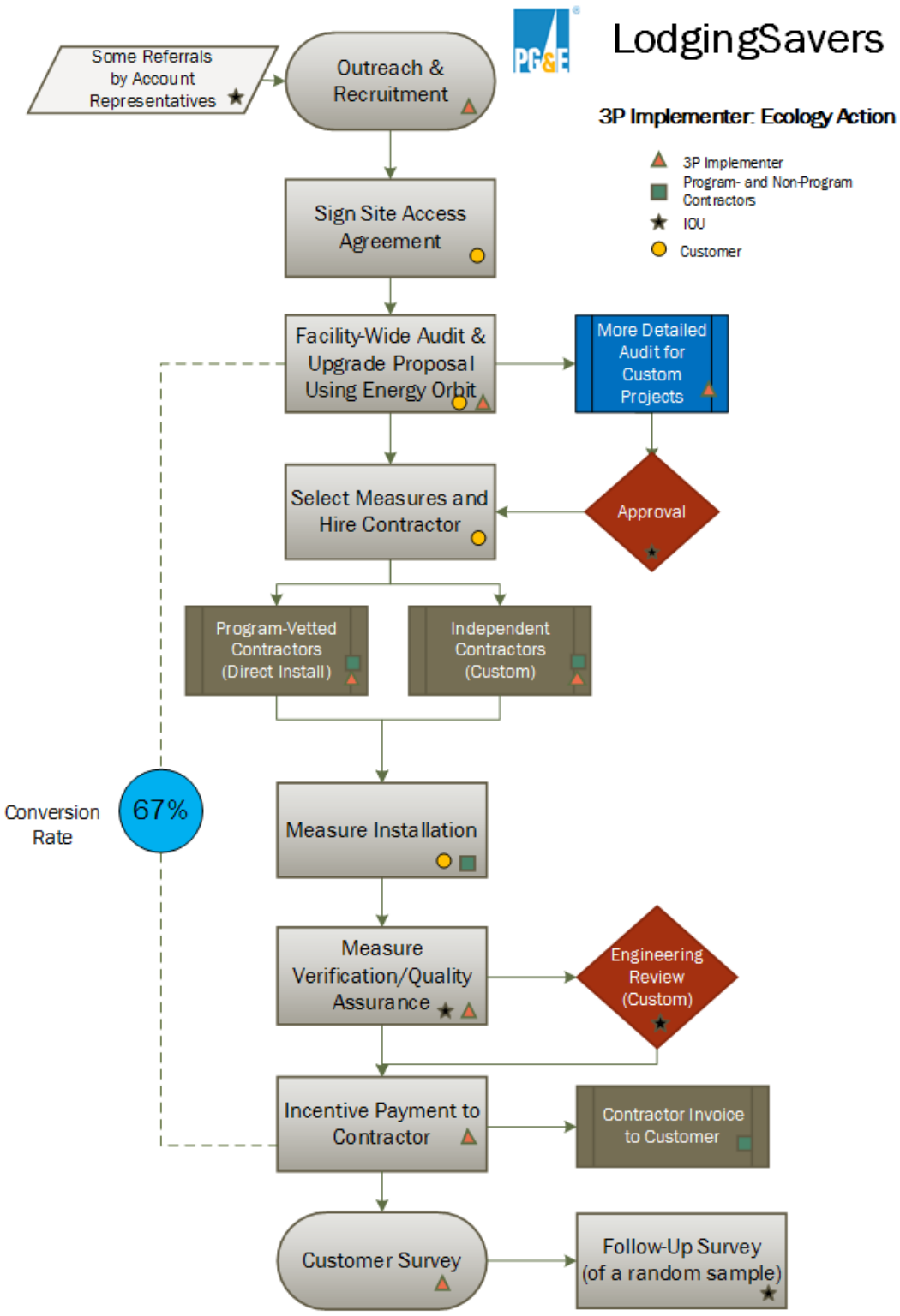
- Marketing and outreach
- Engineering assessment and evaluation
- Vetting and training of program and non-program contractors who do the majority of the installation
- Verification/QA: Upon completed measure installation, the implementer visits each site to perform a QA check to see if measures were installed to specification and if customers are satisfied
- Incentives payment to the contractor: The contractor bills each customer for the difference between the project cost and the incentive check and provides a copy of the customer invoice to the program
- Customer feedback survey: The customers fill out an internal customer survey on *GetFeedback*, which asks about their experience with the specific contractor that performed the work and questions to ascertain ways to improve their internal process

The implementation model in Figure 4 outlines the key implementation activities involved from the first step of finding customers to the final step of completing an energy efficiency project. Based on program-tracking data, the conversion rate from project audit to completion was 67% for the 2013–14 cycle.

Although PG&E Account Representatives provide some referrals to prospective program participants, the implementer conducts most outreach and recruitment. The majority of projects come from the implementers' outreach, such as direct phone calls, because many projects target smaller lodging facilities. The implementer attributes the success in completing many audited projects to careful vetting during its outreach efforts. The program also leverages repeat customers, for example, one-third (29%) of the 2013–14 participants interviewed for the survey indicated that their company had participated in the program before.

In terms of coordination with other programs, the implementer notifies PG&E Account Representatives if the audit reveals energy savings potential for measures not offered through LodgingSavers. In this case, Account Representatives work with Ecology Action staff to help customers find appropriate rebates. More than one-third (40%) of the participants reported in the participant survey that they received help finding other resources and rebates for energy efficiency upgrades. Currently, the program does not coordinate with LGPs.

Figure 4. LodgingSavers Implementation Model



Participant Feedback on Program Value and Effectiveness

The evaluation team identified 207 unique service account IDs for LodgingSavers in the CPUC's Program Database from May 2015[4]. However, the data review revealed several duplicate contact names or duplicate phone numbers because some individuals oversaw projects in multiple lodging facilities. For fielding this survey, we removed these duplicate entries and records with missing contact information and established a sample frame of 161 unique participants defined by phone number and contact name.

Trained staff of the Opinion Dynamics phone bank called the entire sample and completed 35 interviews for a completion rate of 22%. These 35 respondents represented 20% of sites defined by unique address and 30% of energy savings (MMBTU).

Value

Table 14 presents the key program features designed to help customers in the hospitality industry make energy efficiency improvements. The table also shows how many participants did not receive a given feature to help assess how much the target market needs the features to get energy efficiency upgrades.

The data reveal that most participants used all available program features, except direct install services or the program's help to identify contractors and review their bids. One-quarter (27%) of the participants explained that they used their own staff for the measure installation, which indicates a diverse need for installation support in the hospitality industry. On the other hand, only a small proportion of participants used the program's help to find a contractor or review contractor bids, which suggests a small market need for these features.

[4] The evaluation team used the CPUC's Program Database from May 2015 to develop the survey sample. This database version included claims from January 2013 to December 2014, but was not the final database for the 2013-14 cycle. Nevertheless, the number of unique service account IDs was consistent between these two database versions.

Table 14. LodgingSavers Program Features

Program Feature	Survey Wording	Did Not Receive Feature (n=35)
360 Project Assistance	Someone to assist with all aspects of the project from beginning to end	3%
Audit/Identify Savings Potential	Help to identify the energy saving opportunities of your hotel	6%
Sector Expertise	Advice from someone who is knowledgeable about energy efficiency in the hospitality industry	6%
Free Measures/Rebate (a)	No-cost energy-efficient upgrades and equipment/financial assistance to help offset the project costs	6%
Product Recommendations	Help to select the right equipment and upgrades to save energy	9%
Payback Analysis	Help to calculate the costs and payback of the recommended equipment and upgrades	11%
Direct Installation	The program to install the energy-efficient equipment and assist with upgrades instead of hiring your own contractor	51%
Contractor Bid Review	Help with finding a contractor	89%
Contractor Identification	Help reviewing contractor bids	91%

(a) Question wording differed depending on whether the program covered all projects costs or partial project costs.

Participants who recalled receiving a given program feature rated its importance on a scale from 0 to 10, where 10 means a feature was "critically needed" to upgrade to more energy-efficient equipment and 0 indicated that "it was not needed at all." Table 15 presents the distribution of participant scores, as well as the average importance score for each program feature.

All core program features received moderate mean importance scores between 5.8 and 6.8. The mixed distribution of low, moderate, and high ratings confirms diverse market needs among customers in the hospitality industry, although more than half of the participants still highly value the rebate and technical assistance features (360 Project Assistance, Audit/Identify Savings Potential, Sector Expertise, Payback Analysis, and Product Recommendations).

Participants who received optional direct install services highly valued this feature. However, other optional features to identify contractors and review their bids received low mean importance scores, indicating that participants do not need help in this area.

Digging deeper into survey responses further shows that all but three participants scored at least one program feature as highly needed to upgrade to more energy-efficient equipment (7–10 score). This finding suggests that participants simply value different features; only a small percentage of participants (9%) may have done the upgrade without the program.

Table 15. LodgingSavers Importance Scores

	Program Feature	Importance Score (a)				Mean Importance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	Free Measures/Rebate (n=33)	6%	18%	12%	64%	6.8	3.5
	360 Project Assistance (n=34)	0%	18%	21%	62%	6.5	3.0
	Audit/Identify Savings Potential (n=33)	0%	15%	27%	58%	6.4	2.7
	Sector Expertise (n=33)	0%	18%	30%	52%	6.2	2.6
	Payback Analysis (n=31)	0%	29%	13%	58%	6.1	3.4
	Product Recommendations (n=32)	0%	25%	19%	56%	5.8	3.2
	Overall Mean Importance Score					**6.3**	
Optional	Direct Installation (n=17)	0%	12%	12%	76%	7.6	2.3
	Contractor Bid Review (n=4)	0%	50%	50%	0%	3.0	2.2
	Contractor Identification (n=3)	0%	67%	33%	0%	2.0	2.6

(a) Scale: 0–10, where 0 is "not needed at all" and 10 is "critically needed" in order to upgrade to more energy-efficient equipment.

Effectiveness

Table 16 presents the same program features designed to help lodging facilities make energy efficiency improvements. The table shows how participants rated the implementer's performance of each feature on a scale from 0 to 10, where 10 represents "excellent" performance. Participants consistently gave high performance scores for core program features, indicating that the implementer provides high-quality services.

Two optional program features scored slightly lower because participants had different experiences with the program. Of the four participants who received help in finding contractors, two scored the program's performance high, whereas the other two participants gave performance scores of 0. Of the three participants who received assistance with the review of contractor bids, two rated the program's performance high and one respondent rated the program's performance with 0. However, none of these participants highlighted any issues with the implementer, and all said that they would recommend the program to others, suggesting that lower performance scores do not impede on the program's overall effectiveness.

Table 16. LodgingSavers Performance Scores

	Program Feature	Performance Score (a)				Mean Performance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	Payback Analysis (n=31)	0%	0%	13%	87%	8.6	1.6
	Free Measures/Rebate (n=33)	6%	6%	9%	79%	8.6	2.5
	Sector Expertise (n=33)	0%	3%	9%	88%	8.4	2.0
	360 Project Assistance (n=34)	0%	3%	12%	85%	8.3	2.2
	Product Recommendations (n=32)	0%	6%	6%	88%	8.2	2.5
	Audit/Identify Savings Potential (n=33)	0%	9%	12%	79%	7.9	2.8
	Overall Mean Performance Score					**8.3**	
Optional	Direct Installation (n=17)	0%	0%	24%	76%	7.9	1.9
	Contractor Identification (n=3)	0%	33%	0%	67%	6.0	5.3
	Contractor Bid Review (n=4)	0%	50%	0%	50%	4.5	5.3

(a) Scale: 0–10, where 0 is "very poor" and 10 is "excellent."

When asked if any additional program features are needed, more than half of participants (57%) said that the current program design was sufficient. Most of those who offered suggestions (10) recommended rebates for additional measures, such as LEDs, bedroom lights, parking lot lights, programmable thermostats, and solar equipment. Two participants recommended additional information about energy-savings products for future upgrades, and one recommended additional electronic documentation about the installed measures. Lastly, one participant suggested faster project implementation, whereas another participant recommended that the implementer spend more time vetting whether upgrades are practical.

Consistent with high performance scores, almost all participants (94%) said that they would recommend the program to other lodging facilities. More than one-third attributed this to energy or bill savings, but participants also highlighted the implementer's technical assistance and the easy participation process.

It was easy and didn't require a lot of time. and they took care of it once they figured everything out. – Participant

It makes it a lot easier to identify projects and get the rebates. – Participant

[The] turnkey aspect, from the analysis to the implementation is extremely helpful. – Participant

Table 17 summarizes all reasons why participants would recommend the program.

Table 17. Participants' Reasons to Recommend LodgingSavers to Other Lodging Facilities

Reasons	Percent (n=33)
Energy/Bill Savings	39%
Rebate for Equipment Upgrades	24%
Easy Participation	24%
Technical Assistance	15%
Makes Sense/Good Program	12%
Environmentally Responsible/The Right Thing to Do	6%
Helps Get Decision-Makers on Board	3%
Other/Don't Know	6%

Note: Multiple responses.

Despite the overwhelmingly positive feedback, two participants noted that they would not recommend the program for other customers in the hospitality industry. This was not due to negative experiences during their participation in the program. Instead, they pointed to a lack of energy savings. One explained that his facility's energy bill had not decreased since the upgrade. The other participant had a similar argument and indicated that the program upgrades were "not enough."

Challenges

Even though satisfaction with the program was high and almost all would recommend the program to other lodging facilities, a few participants (20%) experienced some challenges during project implementation. Three participants mentioned issues with the contractor's work, another highlighted scheduling issues, and one participant noted product issues (flickering lights). In addition, two participants experienced challenges related to their own processes, including difficulties with internal bureaucracy and difficulties collecting information

required for the upgrade. However, all participants who experienced issues during project implementation noted that the program addressed any problems.

They worked with the contractor to make sure they gave us the service we needed. – Participant

They brought in the manufacturer and helped in installing the retrofit. – Participant

They talked to the contractor [who broke lighting fixtures during the installation] and couldn't find anything similar as a replacement. Then ecology action ordered the light fixtures for those 2–3 rooms. – Participant

2.2.3 Healthcare Energy Efficiency Program

Summary of Findings

Below are key take-aways from case study findings related to SCE's PY2013-14 Healthcare Energy Efficiency Program.

Program Characteristics & 2013-14 Performance Statistics

- This program targets customers in the healthcare industry. The literature review findings in the case study fully aligned with the market barriers that this program is attempting to address.
- The program achieved ex ante energy savings of 12,650 MWh and 1.5 MW. The combined savings (MMBTU) represent 4% of all active 2013-14 3P Commercial programs. The program's energy savings fell just shy of the forecasts (92% of forecast).
- The program reached 12 participants with an average spending of $347,911 per participant.
- The program does not track the data required to calculate a conversion rate from audits to converted projects.

Participant Feedback on Value and Effectiveness

The table below presents key take-aways from exploring the value of program design features to help healthcare facilities make energy efficiency improvements. It also summarizes the implementer's effectiveness in delivering those services from the participant perspective.

Survey Topics	Participant Feedback		Program Implications
Core Technical Assistance Features (a)	Data indicate these are moderately to highly needed	Data indicate the implementer is highly effective at delivering these features	Mixed market need for technical assistance implies some targeting of services may be needed
Contractor Assistance and Policy Support Features (b)	Data indicate that need is low to moderate for these features	Data indicate the implementer is highly effective at delivering these features	No action needed given that these are optional services based on need
Financial Assistance (Rebate)	Data indicate this is moderately needed	Data indicate the rebate level is highly effective	The polarized need for financial assistance implies some targeting or modification is needed
Performance and Value Alignment	Value and performance aligned well, except 360 Project Assistance and Rebate over-performed in relation to market need		Rebate is important to start conversation with sector but level should be reconsidered
Participant Need for Other Program Features	▪ 80% (4/5) describe current design as sufficient ▪ One suggested providing incentives for LEDs		Consider LEDs if offer aligns with State 3P program goals
Likelihood to Recommend Program	All (100%) would recommend the program		No action needed
Challenges During Participation	None		

(a) Audit/Identify Energy Savings, Sector Expertise, ROI Analysis, Product Recommendations (highly needed); 360 Project Assistance, Information for Internal Decision-Making (moderately needed)
(b) Optional features: Contractor Identification, Policy Support (moderately needed), Contractor Bid Review (low need)

Program Design

According to program implementation staff and program documents, Southern California Edison's (SCE) Healthcare Energy Efficiency Program (HEEP) is designed to generate electric savings from customers in healthcare facilities who typically lack financial resources to pursue large energy-efficient upgrades on their own. HEEP helps overcome barriers to energy efficiency upgrades in this sector by offering no-cost facility audits and technical assistance to guide customers through the upgrade process. The program also provides incentives for a range of custom and deemed measures that lower the costs of energy-efficient upgrades. According to program staff, the rebate is important to make energy efficiency upgrades more attractive, as hospitals tend to prioritize expenses that improve medical services and/or patient comfort.

> *The most important thing in a hospital is they want to make sure everyone is comfortable. Because every patient has sent a survey after [his or her] stay in a hospital. Those surveys are to be sent to the insurance companies and the more favorable the patient's experience has been, the better insurance rate the hospitals get. So, they would rather spend money making sure the patients are having a great experience than upgrading equipment to be more energy efficient. They would rather invest money in patient experience and save money on their insurance than invest the money on energy efficiency and save money on their utility bill….To have a financial incentive reserved on their behalf and being able to demonstrate to the decision makers that there is an opportunity to offset the cost for doing the project…has definitely been influential.*
> *– Program Implementation Staff*

The program implementer, Willdan Energy Solutions (Willdan), also manages PG&E's and San Diego Gas & Electric's[5] (SDG&E) 3P healthcare programs since 2010. According to program staff, sector expertise is particularly important to getting healthcare facilities to invest in energy efficiency, as many retrofits are subject to review and approval from California's Office of Statewide Health Planning and Development (OSHPD). OSHPD adds an additional layer of complexity to project implementation in this sector.

A secondary literature review on the topic of energy efficiency in the healthcare industry confirmed the hard-to-reach nature of this sector. This literature review found the following barriers that healthcare facilities face when implementing energy efficiency measures.

- **Lack of capital to invest in energy efficiency.** Many reports pointed out that access to capital was one of the top barriers to increasing energy efficiency investments (Ferenc 2010; Kapur et al. 2011; Morgan 2015; Supple 2010; Research Into Action, Inc. 2009a; Research Into Action, Inc. 2009b). One report in particular indicated that energy-efficient equipment such as lighting and HVAC is "generally more expensive than less efficient counterparts, regardless of market sector or building type." This report continued to say that the "…cost to retrofit major building systems, upgrade a building's envelope, or install more efficient industrial machinery can represent a substantial upfront investment," which poses a difficulty for institutions and investors to justify these improvements or installation of measures. As such, "most public and private institutions focused on minimizing upfront costs" and avoid large-scale investments "unless deemed absolutely necessary by the institution's leadership" (Kapur et al. 2011). Compounding the lack of financial capital is the healthcare sector's reluctance to accept third-party financing (Research Into Action, Inc. 2009b).

- **Highly regulated sector.** One report discussed the lengthy design and review process for capital investments, which are subject to approval by OSHPD in the healthcare sector. Due to the "medical industry's highly regulated nature, medical facilities' managers may be reluctant to use new technologies or equipment with which they are not familiar" (Research Into Action, Inc. 2009a).

- **Concern about the actual ROI in energy efficiency.** Several reports cited a concern about the potential insufficient ROI from energy efficiency (Ferenc 2010; Supple 2010; Kapur et al. 2011). One report provided survey results indicating that the "average maximum allowable payback period for an energy-efficiency investment in the health care sector is 3.4 years, which is down from 3.8 years in 2008" (Ferenc 2010). One report stated that "for an outside investor to justify financing a company's initial energy efficiency capital investment, he or she requires a considerable degree of confidence that the resulting energy cost-savings will occur and deliver a reasonable return. While energy cost-savings are quite reliable for many energy efficiency investments, few players or mechanisms currently exist to measure and verify these savings—making it difficult and costly to collect and track the quantitative evidence required by investors. Until this data is more widely available, investors will continue to regard energy efficiency as inherently risky—preventing a broad expansion of this asset class" (Kapur et al. 2011).

- **Lack of expertise and conflicting priorities.** One report indicated that healthcare facilities have less understanding of energy efficiency than other types of facilities. There's a lack of understanding regarding such benefits as demand reduction, renewable energy sources, and water efficiency (Research Into Action, Inc. 2009b). And even "when a facilities staff person is aware of program opportunities, such a large number of stakeholders are involved in the planning process for medical

[5] Not included in the 3P Commercial Process Evaluation as this is a non-resource program.

facilities that other concerns may take precedence over efficiency measures" (Research Into Action, Inc. 2009b).

The program completed projects with 12 customers throughout 2013–14, and reached 92% of its electric savings goal (ex ante) based on savings in the CPUC's Program Database.

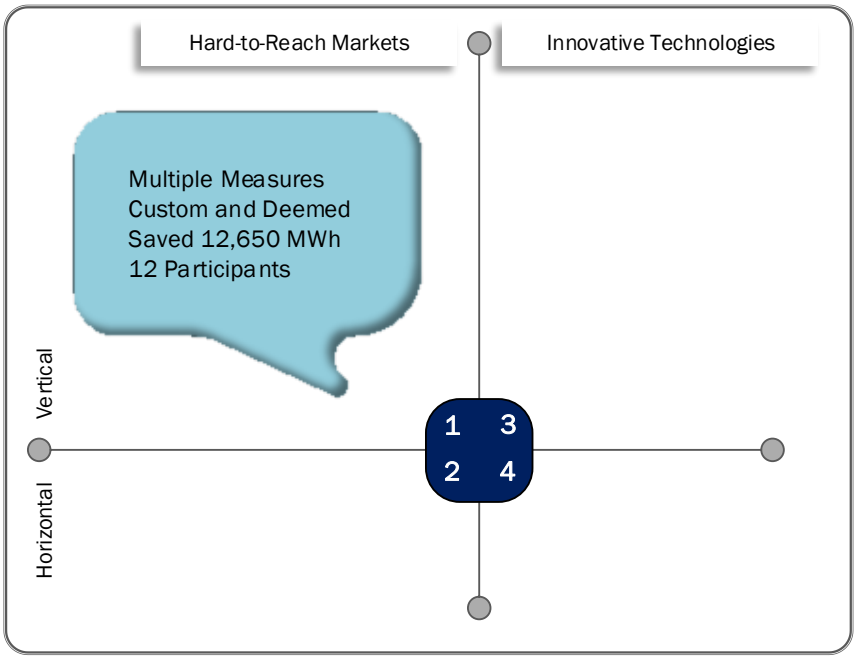
Table 18. Healthcare Energy Efficiency Program Performance Statistics

	Spending	kWh	kW	Therm
Goal (a)	$4,266,874	13,765,286	2,064	0
Actual	$4,171,931 (b)	12,649,835 (b)	1,495 (b)	−3,206 (b)
% Goal Achieved	98%	92%	72%	N/A
Actual per Participant (n=12)	$347,911	1,054,153	125	N/A

(a) IOU Monthly Energy Efficiency Programs Report from December 2014
(b) CPUC's Program Database, from 11-02-2015.

Figure 5 summarizes some of the program's characteristics. This program is placed in Quadrant 1 because it targets a specific vertical sector—healthcare facilities—and offers an array of custom and deemed electric savings measures based on customer needs.

Figure 5. Healthcare Energy Efficiency Program Characteristics



Implementation

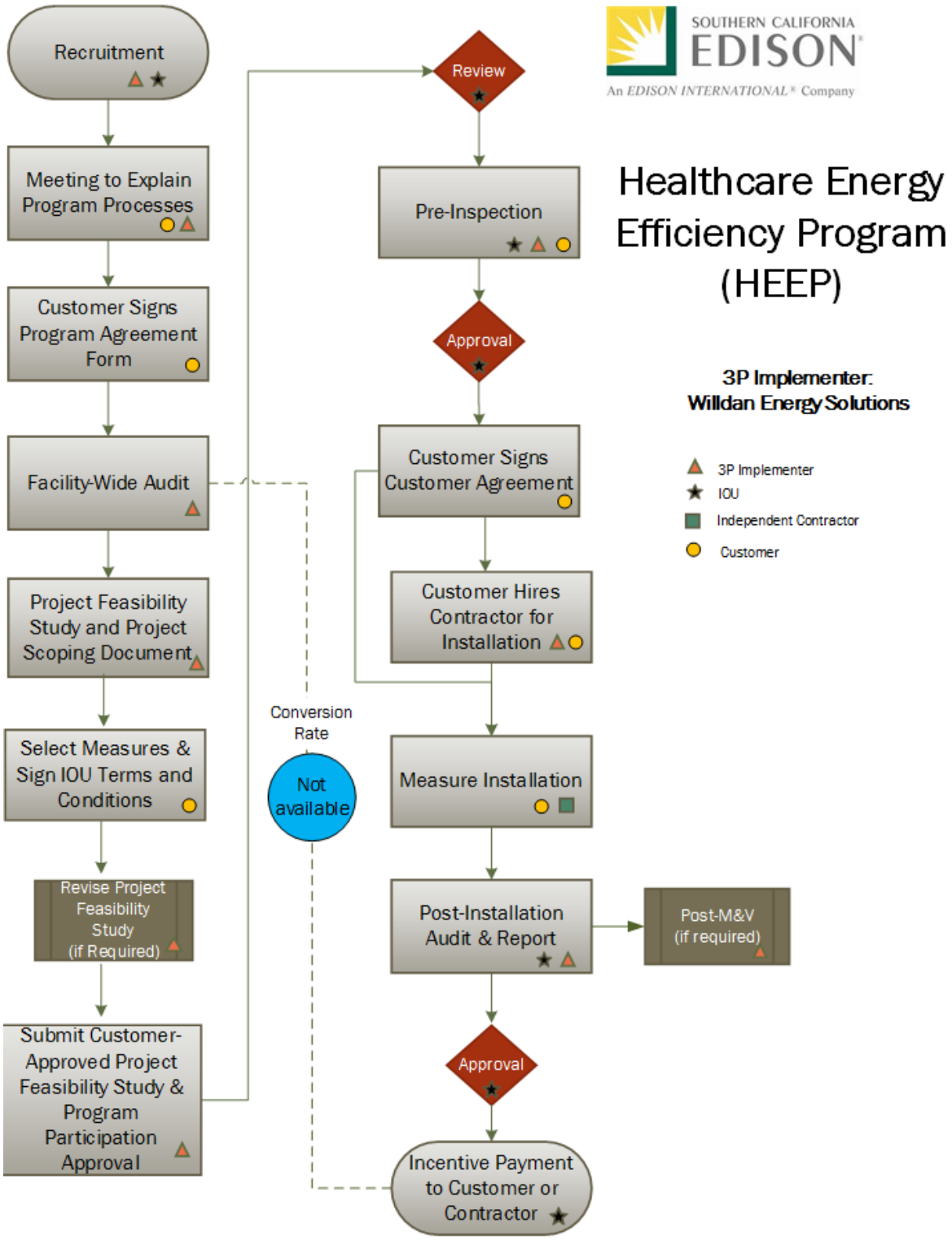
For this program, the implementer, Willdan, establishes the savings goals using the E3 calculator based on previous performance and the existing project pipeline. In addition, the implementer conducts the following:

- Marketing
- Facility audit (typically ASHRAE level 2, collection of trend data if needed)
- Technical assistance to develop requests for proposals (RFPs), hire contractors, interact with contractors
- Verification/QA: Analysis of post-installation trend data, data loggers
- Incentive payment to customer or contractor

The program implementation model in Figure 6 outlines the key implementation steps involved from the first step of finding customers to the final step of completing an energy efficiency project. SCE account executives play an important role in the identification and outreach to prospective participants. To a lesser degree, Willdan leverages existing relationships with the senior management of facilities that participated in other IOU service territories and with facility directors who received other engineering services from Willdan. The program does not track the data required to calculate a project close rate.

Currently, the program does not coordinate with LGPs. However, SCE has started a dialogue to foster a relationship and potential referrals moving forward. The program refers customers to on-bill financing, and four of five respondents reported in the participant survey that the program implementer referred them to other rebates or programs for additional energy savings. However, the program does not coordinate with SCE's Core programs or other 3P programs otherwise.

Figure 6. Healthcare Energy Efficiency Program Implementation Model



Participant Feedback on Program Value and Effectiveness

Based on the CPUC's Program Database from May 2015[6], the evaluation team identified eight unique service account IDs for the program and seven unique participants defined by phone and contact name.[7] Given the small sample size, a trained analyst called the entire sample and completed five interviews, for a completion rate of 71%. These 5 respondents represented 71% of sites defined by unique address and 54% of total energy savings (MMBTU).

Value

Table 19 presents the key program features designed to help healthcare facilities make energy efficiency improvements. The table also shows how many participants did not receive a given feature, which gives an indication of how many customers in the target market did not need the feature to complete the energy efficiency project through the program.

Table 19. Healthcare Energy Efficiency Program Features

Program Feature	Survey Wording	Did Not Receive Feature (n=5)
Product Recommendations	Help to select the right products to save energy	0
Sector Expertise	Advice from someone who is knowledgeable about energy efficient products for healthcare facilities	0
Audit/Identify Energy Savings	Help to identify the energy saving opportunities at your buildings	0
ROI Analysis	Help to calculate the costs and payback of the recommended products	0
Information for Internal Decision-Making	Information to help you get the project approved internally	0
360 Project Assistance	Someone to assist with all aspects of the project from beginning to end	0
Policy Support (OSHPD)	Help to understand and navigate review requirements from the Office of Statewide Health Planning and Development	0
Contractor Bid Assistance	Help reviewing contractor bids	0
Rebate	Financial assistance to help offset project costs	1
Contractor Identification	Help finding a contractor	1

Participants who recalled receiving a given program feature rated its importance on a scale of 0 to 10, where 10 represents high importance or "critically needed" to upgrade to more energy-efficient products. Table 20 presents the distribution of participant ratings and the average importance score for each program feature.

Participants highly valued the program's Product Recommendations, Sector Expertise, Audit, and ROI Analysis, with mean importance scores of 7 or above. These findings suggest that technical assistance is important to generate energy savings in the healthcare sector and that the IOU Core programs may not be sufficient to

[6] The evaluation team used the CPUC's Program Database from May 2015 to develop the survey sample. This database version included claims from January 2013 to December 2014, but was not the final database for the 2013-14 cycle. As a result, we identified 8 unique service account IDs when developing the sample, but 12 in the final program database when determining the total number of participants in the Program Design section.

[7] We could not obtain contact information for one of eight records; therefore the sample frame consisted of seven participants.

address sector needs. Although the program's rebate received a moderate mean importance score, two of four respondents who recalled receiving the financial incentive still highly valued the incentive, indicating that a lack of capital is a barrier to energy efficiency upgrades in healthcare facilities.

The program also offers some services to customers as needed. Despite moderate mean importance scores, the program's strategy to offer optional help with Contractor Identification and OSHPD support is appropriate given that one in five participants highly valued these features. On the other hand, low importance ratings for the program's help reviewing contractor bids suggest that the program may not need to offer these features.

Table 20. Healthcare Energy Efficiency Program Importance Scores

	Program Feature	Importance Score (a)				Mean Importance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	Product Recommendations (n=5)	0	1	0	4	8.2	3.0
	Sector Expertise (n=5)	0	0	2	3	8.0	2.7
	Audit/Identify Energy Savings (n=5)	0	1	1	3	7.2	3.1
	ROI Analysis (n=5)	0	0	3	2	7.2	2.6
	Information for Internal Decision-Making (n=5)	0	1	1	3	6.8	4.1
	360 Project Assistance (n=5)	0	0	3	2	6.2	2.4
	Rebate (n=4)	0	2	0	2	5.5	4.8
	Overall Mean Importance Score					**7.0**	
Optional	Contractor Identification (n=4)	0	2	1	1	4.0	3.4
	Policy Support (OSHPD) (n=5)	0	3	0	1	3.2	4.0
	Contractor Bid Assistance (n=5)	0	4	1	0	2.0	2.1

(a) Scale: 0–10, where 0 is "not needed at all" and 10 is "critically needed" to upgrade to more energy-efficient products.

Effectiveness

Table 21 presents the same key program features designed to help healthcare facilities make energy efficiency improvements and shows how participants rated the implementer's performance of each feature on a scale from 0 to 10, where 10 represents excellent performance. Participants consistently gave high performance scores for all program features indicating that the implementer is highly effective at delivering the program services.

Table 21. Healthcare Energy Efficiency Program Performance Scores

	Program Feature	Performance Score (a)				Mean Performance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	Product Recommendations (n=5)	0	0	0	5	9.4	0.9
	360 Project Assistance (n=5)	0	0	0	5	9.4	1.3
	Information for Internal Decision-Making (n=5)	0	0	1	4	9.0	2.2
	Sector Expertise (n=5)	0	0	1	4	9.0	2.2
	Rebate (n=4)	0	0	1	3	8.8	2.5
	Audit/Identify Energy Savings (n=5)	0	0	2	3	8.0	2.7
	ROI Analysis (n=5)	0	0	2	3	8.0	2.7
	Overall Mean Importance Score					**8.8**	

Program Feature		Performance Score (a)				Mean Performance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Optional	Contractor Identification	0	0	0	4	9.3	1.5
	Policy Support (OSHPD)	0	0	1	4	9.0	2.2
	Contractor Bid Assistance	0	0	1	4	9.0	2.2

(a) Scale: 0–10, where 0 is "very poor" and 10 is "excellent."

When asked if any additional program features are needed, almost all participants said that the current program design was sufficient with the exception of one participant who suggested incentivizing LEDs.

Consistent with high performance scores, all respondents said that they would recommend the program to other healthcare facilities. They described the program as an easy way to reduce operating costs, particularly as electricity rates continue to increase. They also felt that the program provided them with new ways to save energy and that program participation was generally easy.

The info they provided and the ease of working through it was the best. – Participant

(We) saved a quarter million dollars a year, and it's compounded when the rates go up. Healthcare is wasteful enough. – Participant

Even though satisfaction with HEEP was high and everyone would recommend the program, three of five respondents experienced some challenges during implementation. The challenges differed among respondents. One highlighted turnover of SCE account executives, and another reported that a local noise abatement program interfered with project upgrades. A third respondent explained that the program initially failed to consider operational procedures at the facility when recommending energy-savings products, although this was later rectified.

2.2.4 School Energy Efficiency Program

Summary of Findings

Below are key take-aways from case study findings related to SCE'S PY2013-14 School Energy Efficiency Program.

Program Characteristics & 2013-14 Performance Statistics

- This program targets K–12 public and private schools.
- The literature review findings in the case study fully aligned with the market barriers that this program is attempting to address.
- The program achieved ex ante energy savings of 16,962 MWh, 3.2 MW. The combined savings (MMBTU) represent 4% of all active 2013-14 3P Commercial programs. The program's energy savings fell slightly short of forecasts (83% of forecast).
- The program reached 351 participants with an average spending of $12,746 per participant.
- The program does not track the data required to calculate a conversion rate from audits to converted projects.

Participant Feedback on Value and Effectiveness

The table below presents key take-aways from exploring the value of program design features to help schools upgrade to more energy efficient products. It also summarizes the implementer's effectiveness in delivering those services from the participant perspective.

Survey Topics	Participant Feedback		Program Implications
Core Technical Assistance Features (a)	Data indicate these are moderately to highly needed	Data indicate the implementer is highly effective at delivering these features	Diverse market needs indicate a need for betting targeting within sector
Direct Install Feature	Data indicate this is highly needed	Data indicate the implementer is highly effective at delivering direct install services	No action needed
Financial Assistance (Free Measures)	Data indicate this is highly needed	Data indicate free measures are highly effective	No action needed
Performance and Value Alignment	Value and performance aligned well, only 360 Project Assistance over-performed in relation to market need		Hand-holding from beginning-to-end in a direct install project may not be needed for all
Participant Need for Other Program Features	▪ 36% describe current design as sufficient ▪ Most common suggestion was to incentivize outdoor lighting, LED and hallway lights		Consider additional measures if they align with State 3P program goals
Likelihood to Recommend Program	91% (10/11) would recommend the program		Ensure that all qualified lighting is covered by program; tailor audit to specific schools; ensure lighting output is sufficient for classroom
Challenges During Participation	Implementer missed some lighting installations; need for more customized audit; issues with lighting quality		

(a) Audit/Identify Energy Savings, ROI Analysis, Product Recommendations (highly needed); Sector Expertise, Information for Internal Decision-Making 360 Project Assistance (moderately needed)

Program Design

SCE's School Energy Efficiency Program (SEEP) is designed to generate electric savings from hard-to-reach customers in the K–12 public or private school sector. Customers in this sector typically lack the financial and human resources to pursue energy efficiency upgrades on their own. Fluorescent lighting and occupancy sensors are the measures most commonly installed through the program.

The program implementer, Willdan, has experience with energy efficiency upgrades in schools and implemented SEEP for SCE since 2012. According to the implementer, sector expertise is particularly important operationally. Sector expertise is important to market the program effectively, navigate the decision-making structure, and facilitate retrofit projects around a school's unique schedule of operations, in comparison to other non-residential sectors.

A secondary literature review on the topic of energy efficiency in the school industry confirmed the hard-to-reach nature of this sector. The literature review found the most common barrier of energy efficiency within this sector to be a lack of project funding. Other common barriers included a lack of knowledge of energy savings opportunities, benefits, and implementation. Specifically, "[p]ursuing energy efficiency…[in the school sector]…requires not only an awareness of typical opportunities and financial benefits but also an understanding of the facility-specific information that would allow the appropriate prioritization and selection of those opportunities" (Optimal Energy 2013).

Please note that the literature review did not find reports that analyze the California school sector after Proposition 39. Introduced in 2013, Proposition 39 (also called the California Clean Energy Jobs Act) allocated funding for schools for energy efficiency. Under the 5-year initiative, the California legislature makes available up to roughly $550 million annually to improve energy efficiency and expand clean energy generation in schools. Eligible local educational agencies (e.g., county offices of education, school districts, charter schools) can request funding by submitting an energy expenditure plan to the California Energy Commission, which

must approve these plans before funding is distributed.[8] The 2013–14 cycle was the first year that Proposition 39 funding was available.

The following are the barriers schools' facilities face when implementing energy efficiency measures, as identified in the literature review (please note that many of the quotes below are from: Optimal Energy 2013[9]).

- **Lack of project funding.** "One of the most commonly cited barriers to the implementation of … energy efficiency … projects is the lack of adequate funding to move forward" (Optimal Energy 2013). Energy projects face competition for funding with other school needs, so they rarely receive priority because districts tend to invest in areas to improve education quality rather than energy efficiency, as it is typically not part of a school's mission statement. This persists when schools lack energy policies or objectives that detail energy cost objectives or staff responsibilities for energy consumption. This barrier is consistent in higher education as well. Based on a survey of higher education facilities managers in 2015, insufficient funding (52%) and the inability to provide an acceptable ROI to procure funding (46%) were cited by about half of those polled as one of the top three obstacles to achieving energy efficiency goals (Redshift Research, Schneider Electric, and the Alliance to Save Energy). Additionally, energy efficiency products that cost more upfront but save money in energy costs over time can face a challenging approval process: "Even though schools sometimes can factor in long-term costs, districts often have difficulty justifying higher capital costs for green attributes" (Syphers 2003).

- **Lack of awareness of energy savings opportunities.** "Lack of awareness of energy saving opportunities is prevalent in schools. In many school districts, administrators and facilities staff are simply unaware of opportunities for energy saving capital improvements … [and] … improved operation and maintenance practices" (Optimal Energy 2013). Without crucial information, such as energy costs or how costs compare to other schools, staff cannot detect energy system failures or identify areas of waste in their buildings: "[F]acilities managers and business officials do not always realize the magnitude of the impact that good energy management can have on their district's budget" (Princeton Energy 2004).

- **Lack of awareness of financial benefits (and facility staff lack crucial information).** "Even if school staff are aware of available energy efficiency … opportunities, they may not possess a level of understanding of the financial benefits associated with those improvements necessary to motivate action…. [T]his lack of awareness is understandable as the impacts of efficiency investments are largely invisible unless consciously tracked. The problem is exacerbated by the fact that energy bills for the majority of school districts are handled by the central district office without any involvement by staff charged with the operation of the energy-consuming equipment" (Optimal Energy 2013).

- **Lack of technical expertise and building information.** "While facilities or other school district staff may recognize the potential benefits of pursuing energy saving opportunities, they may not have the technical expertise to initiate the planning and implementation processes. Pursing energy performance upgrades most efficiently requires a specialized skillset to identify, analyze, prioritize, select, and manage upgrades. Facilities staff do not always have the necessary skills, possess the necessary building intelligence, or know whom to work with to carry out a successful project. As related

[8] http://www.energy.ca.gov/efficiency/proposition39/.

[9] The Optimal Energy report was the most comprehensive of all literature reviewed and is referenced throughout this section. Although the report focuses primarily on New York schools, these market barriers are general to the school sector. Findings were based on an informal poll of New York state school business officials conducted in June 2013.

by [the New York State Energy Research and Development Authority], one of the most common barriers encountered by schools is a 'lack of information about what they should be doing' " (Optimal Energy 2013).

- **Lack of adequate time and staff (someone is needed to shepherd projects to completion).** "Successful energy cost savings projects typically require an 'on-the-ground' advocate at the facility to shepherd the projects to completion. However, the reality at many school districts is that facilities' staff are consumed with day-to-day operations. The majority of schools districts do not have dedicated energy managers and energy management responsibilities typically fall to normal facilities staff. Without clearly defined energy management roles and responsibilities, there may be a lack of accountability regarding energy cost control" (Optimal Energy 2013). Efficiency planning is generally viewed as an additional effort and not prioritized.

- **Project approval requirements or procedures.** According to Redshift Research (2015), among higher education staff, 59% of higher education professionals see organizational or administrative barriers such as procedures as the biggest obstacle to achieving their school's energy efficiency goals. "While 92 percent of respondents stated that their school had a culture that encourages energy efficiency practices, organizational barriers are challenging their ability to achieve efficiency goals. Fifty-nine percent view this as the biggest obstacle, with insufficient funding and lack of a clear definition of success also ranking highly" (Hardesty 2015). Related, Syphers (2003) reported that procedures were a barrier that impeded allocating funding to efficiency: "Municipal operations and capital budgets often tend to be allocated through different processes and even derived from different funding sources. As a result, it is usually challenging to transfer funds between the two accounts. This is a significant barrier to implementation of many green practices, especially those that might cost more up front, but save money over the life of the building." In New York City schools, the time it takes to implement energy efficiency measures can be quite long, due to a variety of factors, such as "the permitting process of the [New York State Education Department], holding public votes to secure funding for school products, and working around the constraints of the school year. Combined with the general barriers of limited program staffing and funding, developing projects in schools can be an uphill battle" (Optimal Energy 2013).

These findings are consistent with participant responses in this program: 61% of participants cited the lack of funds as a main barrier to energy efficiency projects. The next most common barrier cited was lack of knowledge of efficient products and opportunities (31%). One participant mentioned that getting approval within the school district was difficult (8%).

> *Due to the amount of upgrades we had to perform, we would have maxed our budget to meet this demand. The program helped us upgrade all of our schools at no cost.*
> *– Participant*

To help overcome these barriers, the SEEP design offers no-cost facility audits and no-cost lighting retrofits, proactively approaches schools, helps identify energy savings opportunities, facilitates installation by working around a school's schedule, provides technical assistance, and shepherds projects to completion. Therefore, the program is designed to overcome the majority of these barriers and enable schools to complete energy efficiency retrofits.

The program completed projects with 351 customers (defined by unique service account ID) throughout 2013–14 and reached 83% of its kWh goal, based on ex ante savings data in the CPUC's Program Database. Table 22 presents the actual savings and program spending information.

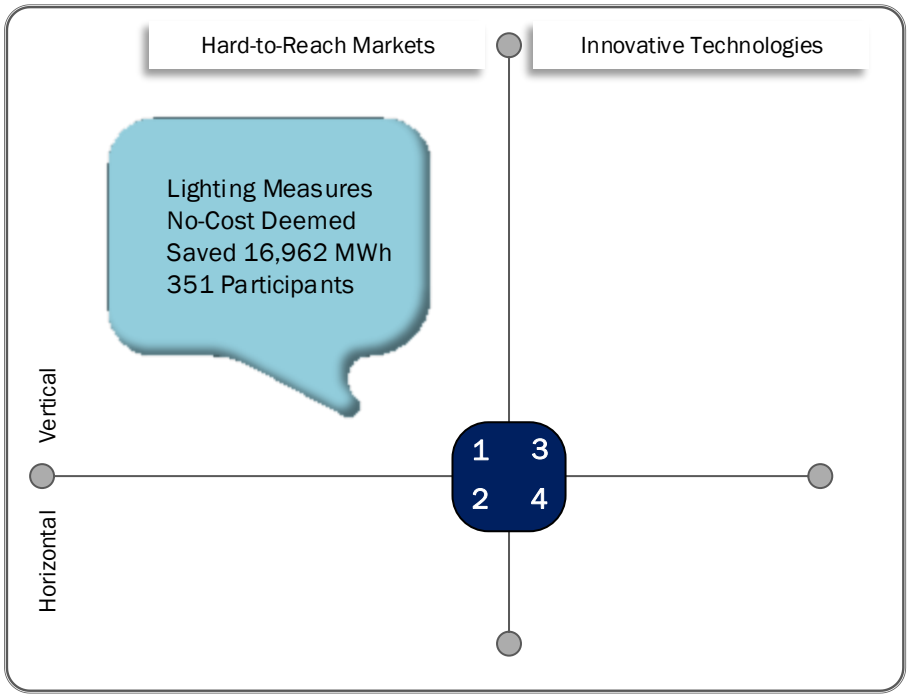
Table 22. School Energy Efficiency Program Performance Statistics

	Spending	kWh	kW	Therm
Goal (a)	$5,958,450	20,345,353	294	0
Actual	$4,473,850 (b)	16,962,032 (b)	3,176 (b)	−79,990 (b)
% Goal Achieved	75%	83%	1080%	N/A
Actual per Participant (n=351)	$12,746	48,325	9	N/A

(a) IOU Monthly Energy Efficiency Programs Report from December 2014. For this program, we use this source for expenditure data because the CPUC's Cost Table listed negative expenditure of $−4,525,190 for the 2013–14 program cycle
(b) CPUC's Program Database, version from 11-02-2015.

Figure 7 summarizes some of the program's characteristics. The program is placed in Quadrant 1 because it targets a specific vertical sector —schools— with common/traditional technologies.

Figure 7. School Energy Efficiency Program Characteristics



Implementation

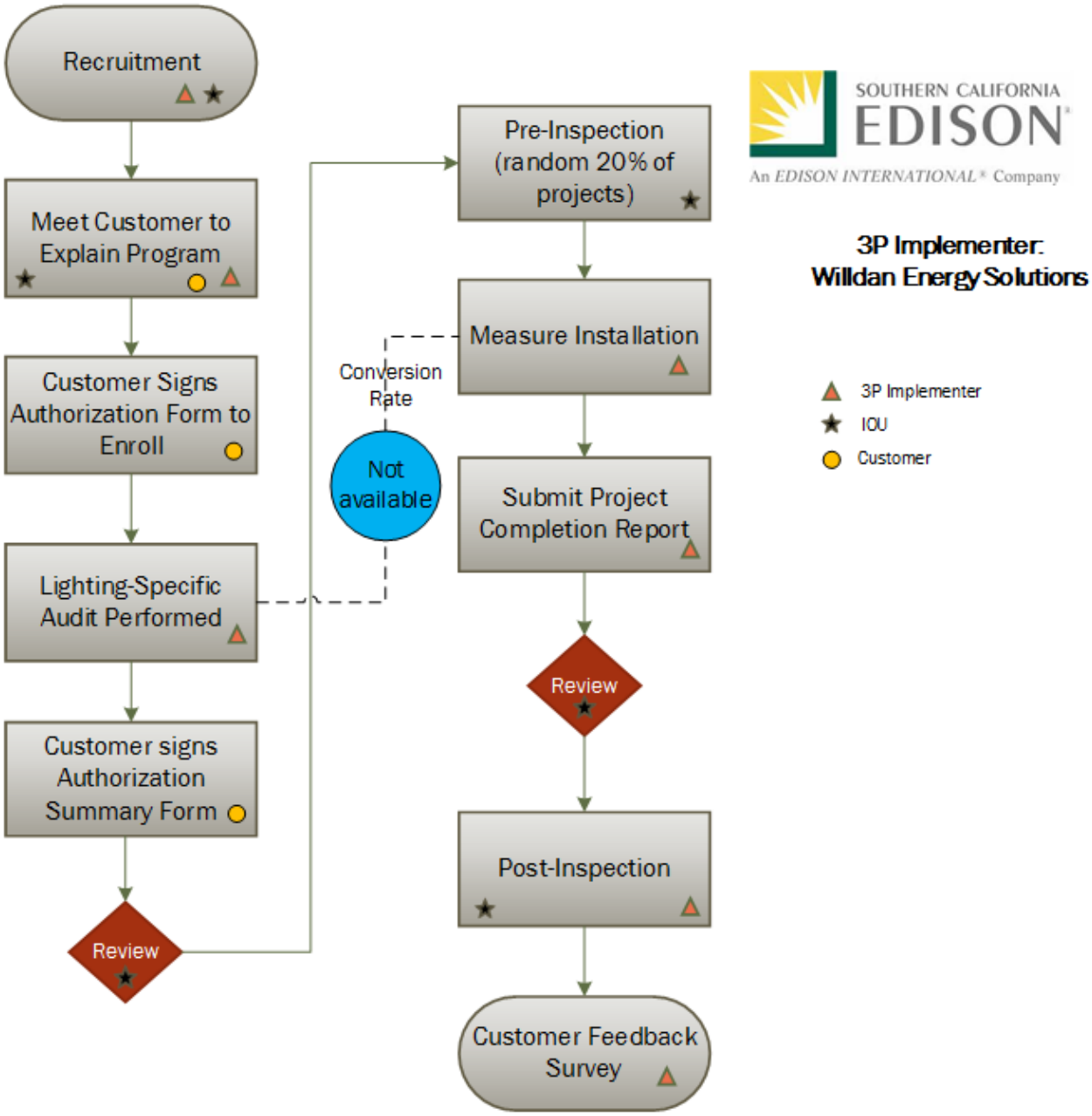
The implementer plays a key role in the entire program implementation, from marketing the program and assessing a school's lighting needs to directly installing measures. Specifically, the implementer conducts the following:

- Outreach
- Lighting-specific audits of school buildings
- Installation of lighting fixtures and/or bulbs
- Installation of other measures
- Verification/QA: Implementer does a random inspection together with SCE on ~65% of projects
- Customer feedback surveys

The program implementation model in Figure 8 outlines the key implementation steps involved from the first step of finding customers to the final step of completing an energy efficiency project. SCE Account Executives play an important role in the identification of program participants. Account Executives in SCE's Business Client Division perform bill-rate analyses and recommend prospective participants to the implementer. The implementer and account representatives work closely together in reaching out to the customer. They typically approach the main decision maker together, which leverages the utility's credibility, as schools receive many upgrade recommendations from various contractors. During these visits, SCE will also answer any questions the school may have about its energy usage or energy bill, which adds an additional level of customer service. The program does not track the data required to calculate a project close rate, however, program implementation staff could provide a conversion rate estimate.

Currently, the program does not coordinate with LGPs. The program does not coordinate with Core or other 3P programs or refer customers to on-bill financing, which is appropriate given that the program requires no payment from the customer. However, although SEEP does not formally coordinate with other programs, 3 of 11 respondents reported in the participant survey that the implementer recommended other resources or rebates for energy efficiency upgrades.

Figure 8. School Energy Efficiency Program Implementation Model



Participant Feedback on Program Value and Effectiveness

The evaluation team identified 188 unique service account IDs for SEEP in the CPUC's Program Database from May 2015[10]. However, the data review revealed several duplicate contact names or duplicate phone numbers as some school district employees oversaw projects in multiple schools. For fielding this survey, we removed these duplicate entries and records with missing contact information, and established a sample frame of 35 unique participants defined by phone and contact name.

A trained analyst called the entire sample and completed 11 interviews for a completion rate of 31%. These 11 respondents represented 37% of sites defined by unique address and 33% of total energy savings (MMBTU).

Value

Table 23 presents the key program features designed to help schools make energy efficiency improvements. The table also shows how many participants did not receive a given a feature. In this case, all participants used all of the program features offered, which suggests that participant needs are fairly homogenous in the school sector.

Table 23. School Energy Efficiency Program Features

Program Feature	Survey Wording	Did Not Receive Feature (n=11)
Free Measures	No-cost lighting products	0
Direct Install	The program to install the energy saving products for you (as opposed to you hiring a contractor)	0
Product Recommendations	Help to select the right lighting products to save energy	0
ROI Analysis	Help to calculate the costs and payback of the recommended products	0
Audit/Identify Energy Savings	Help to identify the energy saving opportunities of your school	0
Sector Expertise	Advice from someone who is knowledgeable about energy efficiency upgrades in schools	0
Information for Internal Decision-Making	Information to help you get the project approved internally	0
360 Project Assistance	Someone to assist with all aspects of the project from beginning to end	0

Participants who recalled receiving a given program feature rated its importance on a scale from 0 to 10, where 10 means a feature was "critically needed" to execute the energy efficiency project and 0 indicated that "it was not needed at all." Table 24 presents the distribution of participant scores and the average importance score for each program feature. There were no optional program features measured in this survey.

Two of the program's eight core features (Free Measures and Direct Install) achieved importance scores of close to 10. This indicates how important free measures and no-hassle installation are in enabling schools to

[10] The evaluation team used the CPUC's Program Database from May 2015 to develop the survey sample. This database version included claims from January 2013 to December 2014, but was not the final database for the 2013-14 cycle. As a result, we identified 188 unique service account IDs when developing the sample, but 351 in the final program database when determining the total number of participants as shown the Program Design section.

complete energy efficiency projects. However, when asked if they would be willing to pay for measures going forward, 6 participants (out of 10) said "yes." The remaining four said that they would not be willing to pay due to limited funding and difficulties in getting funding approved for such projects (an 11th participant reported paying for a portion of the project, so was not asked about his/her willingness to pay). Product Recommendations also received a high score of 9.2, indicating that participants did value the program's knowledge and assistance in recommending measures that would help schools save energy.

ROI Analysis and Audit/Identify Energy Savings received strong scores of 8.3 and 7.7, respectively. Sector Expertise, Information for Internal Decision-Making, and 360 Project Assistance all received scores below a 7, indicating moderate importance. Interestingly, even though the implementer indicated that Sector Expertise was critical to program success, participants gave it a moderate importance score. It may be that implementer's efforts to market effectively to schools and navigate the schools' structure may not have been overtly visible to participants. The moderate score for Information for Internal Decision-Making is consistent with participant responses where 9 out of 11 participants said decision-making is easy in their school and requires only one or two people's approval. The three lowest scoring features (Sector Expertise, Information for Internal Decision-Making, and 360 Project Assistance) also had the highest standard deviations (3.4 to 4.9), which reflects polarized scoring of these features. While more than half of participants gave scores of 7 or higher for these features, a substantial number also gave scores of 3 or below, indicating that some customers did not need these features as readily as others.

These findings confirm that the market barriers to pursue energy efficiency upgrades in schools are primarily cost and knowledge related. Schools really value the financial assistance, ease of installation, and product knowledge that SEEP provides. All but two participants scored the top three features highly, with a 7 or above.

Table 24. School Energy Efficiency Program Importance Scores

Program Feature		Importance Score (a)				Mean Importance Score	Standard Deviation
		Don't Know or Refused	0–3	4–6	7–10		
Core	Free Measures (n=10)	1	0	0	10	9.9	0.3
	Direct Install (n=11)	0	0	0	11	9.8	0.6
	Product Recommendations (n=11)	0	0	1	10	9.2	1.7
	ROI Analysis (n=10)	1	0	2	8	8.3	2.2
	Audit/Identify Energy Savings (n=11)	0	1	2	8	7.7	3.3
	Sector Expertise (n=11)	0	2	3	6	6.5	3.8
	Information for Internal Decision-Making (n=11)	0	4	1	6	5.9	4.9
	360 Project Assistance (n=10)	1	2	3	5	5.9	3.4
	Overall Mean Importance Score					**7.9**	

(a) Scale: 0-10 where 0 is "not needed at all" and 10 is "critically needed" to upgrade to more energy-efficient products.
Mean importance scores do not include "Don't Know or Refused" responses.

Effectiveness

Table 25 presents the same key program features and shows how participants rated the implementer's performance of each feature on a scale from 0 to 10, where 10 represents excellent performance. Participants consistently gave high performance scores for all program features (above 8.0), indicating that the implementer is highly effective at delivering the program. Again, both Free Measures and Direct Install were

the two highest rated program features indicating that the program is highly effective at delivering these features.

Table 25. School Energy Efficiency Program Performance Scores

Program Feature		Performance Score (a)				Mean Performance Score	Standard Deviation
		Don't Know or Refused	0–3	4–6	7–10		
Core	Free Measures (n=10)	1	0	0	10	10.0	0.0
	Direct Install (n=11)	0	0	0	11	10.0	0.0
	ROI Analysis (n=10)	1	0	1	9	9.2	1.4
	360 Project Assistance (n=11)	0	0	1	10	9.0	1.5
	Audit/Identify Energy Savings (n=10)	1	0	1	9	8.9	1.9
	Information for Internal Decision-Making (n=9)	2	1	0	8	8.8	3.3
	Product Recommendations (n=11)	0	1	0	10	8.6	3.0
	Sector Expertise (n=10)	1	1	2	7	8.1	3.4
	Overall Mean Performance Score					**9.1**	

(a) Scale: 0–10, where 0 is "very poor" and 10 is "excellent." Mean importance scores do not include "Don't Know or Refused" responses.

Additional Services the Program Provided

As stated previously, SCE Account Executives help identify schools and help promote and explain the program. Two participants mentioned that SCE's involvement in proactively reaching out to them really convinced them to participate in the program. While this may not be how all participants enter the program, it does speak to the value of SCE Account Executives' role in legitimizing the program and helping influence schools to conduct energy efficiency projects.

> *Edison comes into the school and is trusted and knowledgeable about what we needed. They organize everything for the school. They are a trusted resource. Edison took care of everything. – Participant*

Recommendations to Improve the Program

Include External Lighting. When asked if there was anything the program could have provided, participants recommended that the program include more types of technologies, specifically outdoor lighting (e.g., external building and stadium lights), LEDs, and hallway lights. Four of the seven participants who made recommendations mentioned wanting external lighting to be included in the program.

> *[The program could have provided] outdoor lighting or parking lot lighting. Under our current budget, the schools would not be able to undergo such a financial project. This type of program is exactly what we need in order to upgrade our facilities. We would not be able to do so otherwise. – Participant*

> *[The program could have provided] LED lights, stadium lights, external building lights, hallway lights. Any upgrades for these areas would be great. I want to know more. – Participant*

A More Tailored Facility Audit. One other participant indicated that the assessment of energy efficiency upgrades was not tailored to the school or comprehensive enough to take advantage of all the energy efficiency opportunities available. Despite this feedback, the participant said s/he would still recommend the program to other schools.

> *I was a little frustrated about the method of installations. There should be some kind of assessment depending on school size, age, and classroom size. There should be some type of method for identifying what each school needs. This way, upgrades are most functional to the school. – Participant*

Better Informed about Energy Conservation Opportunities. This same participant expressed frustration over lack of knowledge about energy conservation programs, like SEEP, and other potential efficiency opportunities. The participant learned about SEEP only at the last minute, catching the tail end of the T12 to T8 retrofits, and wished to be better informed about program opportunities going forward.

> *If we could stay knowledgeable about the different programs available, then that would be even better. We had some changes within Edison and we missed out on some programs. – Participant*

Therefore, to improve its effectiveness, the program could consider (1) increasing program offerings to include more types of lighting, particularly external lighting; (2) increasing the comprehensiveness of the audit and recommendations to schools; and (3) helping schools identify more programs and opportunities to improve energy efficiency.

Almost All Participants Said That They Would Recommend the Program

Consistent with high performance scores, 10 out of 11 participants (91%) said that they would recommend the program to other schools. Participants noted several reasons for why they liked the program, as highlighted in the participant quotes in Table 26, including the easy implementation process, no-cost services, and energy savings. Of those who would recommend the program, about half said that it was because the program was easy to participate in, and the other half said that it was because the program was at no cost to the school. Participants also said that the program really helped their schools get much-needed energy efficiency upgrades, showing how the program played a key role in making these projects happen (and suggesting that they may not have occurred outside the program). Although 6 of 10 participants did say that they were willing to pay for a portion of the project in the future, the high need and performance scores in these areas still show that the technical and financial assistance (even partial financial assistance) are powerful drivers for schools to achieve energy savings. The high performance scores lend credence to how effective the implementer was in delivering the program and how effective the program design was in overcoming barriers to energy efficiency in the school sector.

Table 26. Reasons Participants Would Recommend the Program

Participant Quotes
It was a smooth process and really helped our small school get much-needed upgrades.
It was a very easy process and very rewarding.
This kind of program is great for us because we don't have to rely on donors to get these kinds of projects done. Once approved it really helps us save money all around.
It is a great program. It really helps districts like ours and other districts get these critical upgrades that our schools very much need.
This program and [the implementer] were great. We enjoyed working with them so much that we hired them for other contracting projects. We still work with them today. This was a great program and everything ran smoothly. It was fantastic.
Any program that helps conserve energy in a school is a beneficial program, especially when it is no cost to the district.

Program Challenges

Even though satisfaction with the program was high and 10 out of 11 participants would recommend it, 3 participants mentioned that they experienced challenges during implementation. As mentioned previously, one participant indicated that the program's energy assessment could have been better tailored to the school and provided more comprehensive recommendations. This same participant also said that it was challenging not knowing about available energy conservation programs.

A second participant said that the implementer missed some lighting installations within the district's 22 schools, but, given the size of the project, the implementer still did a good job. A third participant said that getting funding approved for efficiency projects is a challenge in general, especially for these types of programs, as "people just don't see the immediate need" (Participant). However, this was not necessarily something the program could address. Despite these challenges, all three of these participants said that they would recommend the program to other schools.

Separately, the one participant who would not recommend the program said the reason related to the brightness of the classrooms after the project. The participant said that the number of bulbs in classrooms decreased from four to three, which made the rooms dimmer, thereby reducing the quality of the lighting in the classroom. Although this was the only instance in which this was mentioned, it warrants consideration and may suggest a need to examine how and whether the quality of lighting will be affected post-project.

> *After the lighting upgrades were made the rooms seemed to be more dim in the corners of the room. At the desk level, the lighting was good, but at the corners of the room the room was more dim. – Participant*

2.2.5 Program for Resource Efficiency in Private and Public Schools (PREPPS)

Summary of Findings

Below are key take-aways from case study findings related to SoCalGas' PY2013-14 PREPPS program.

Program Characteristics & 2013-14 Performance Statistics

- This program targets public and private schools.
- The literature review findings in the case study fully aligned with the market barriers that this program is attempting to address.
- The program achieved ex ante gas savings of 297,461 Therm. The combined savings (MMBTU) represent 2% of all active 2013-14 3P Commercial programs. The program's energy savings fell short of the forecasts (42% of forecast).
- The program reached 40 participants with an average spending of $29,966 per participant.
- The program's conversion rate from audits to completed projects was moderate at 67%.

Participant Feedback on Value and Effectiveness

The table below presents key take-aways from exploring the value of program design features to help schools upgrade to more energy efficient products. It also summarizes the implementer's effectiveness in delivering those services from the participant perspective.

Survey Topics	Participant Feedback		Program Implications
Core Technical Assistance Features (a)	Data indicate these are moderately needed	Data indicate the implementer is highly effective at delivering these features	Findings indicate a diverse need in the target market; better targeting may be needed
Financial Assistance (Rebate)	Data indicate rebate is highly needed	Data indicate the rebate level is highly effective	No action needed
Performance and Value Alignment	Value and performance aligned well, except Product Recommendations and Information for Decision-Making over-performed in relation to market need		Consider shifting resources or better targeting within the sector
Participant Need for Other Program Features	▪ 78% describe current design as sufficient ▪ Suggestions included a broadening of the contractor options, and adding information about energy efficiency opportunities in other districts		Explore feasibility of suggestions
Likelihood to Recommend Program	All would recommend the program		No action needed
Challenges During Participation	One participant noted issue with project approval time and rebate processing time		

(a) Audit/Identify Energy Savings, 360 Project Assistance, Sector Expertise, Product Recommendations, Information for Internal Decision-Making

Program Design

Southern California Gas Company's (SoCalGas) Program for Resource Efficiency in Private and Public Schools (PREPPS) is designed to generate gas savings from customers in the public and private school sector who, according to program implementation staff, typically lack financial and human resources to pursue energy efficiency upgrades on their own. While most measures are available through SoCalGas' Core portfolio, PREPPS offers no-cost facility audits and technical assistance to guide schools through the upgrade process and help overcome these barriers. The program also seeks to speed up the implementation of energy-efficient equipment in a sector that is known for long decision-making processes. To do so, the program utilizes the implementer's sector experience as well as a 20% bonus for schools that commit and install quickly. This program is SoCalGas's only 3P program with a commercial target market. Notably, based on our survey results, the bonus motivated 11 of 18 (almost two-thirds) to move more quickly on a project.

The program implementer, CLEAResult, also implements PG&E's SEEP and is experienced in the school sector. PREPPS began with private schools and then expanded its target market to public schools in 2013, which, according to the program implementer, made up the majority of program participants during the 2013–14 cycle. The implementer explained high participation from public schools was due to increased marketing in this new sector and the availability of Proposition 39 funds. Program measures include pool heaters, outdoor pool covers, water heaters, pipe and tank insulation, steam traps, space heating, boilers, food service equipment, and other custom measures. The program offers a deemed and custom track, depending on the specific project.

A literature review on the topic of energy efficiency in the schools' facilities confirmed the hard-to-reach nature of this sector. The literature review found the most common barrier to energy efficiency within this sector to be a lack of project funding. Other common barriers were related to lack of knowledge of energy savings opportunities, benefits, and implementation. Specifically, "[p]ursuing energy efficiency … [in the school sector] … requires not only an awareness of typical opportunities and financial benefits but also an understanding of the facility-specific information that would allow the appropriate prioritization and selection of those opportunities" (Optimal Energy 2013).

Please note that the literature review did not find reports that analyze the California school sector after Proposition 39. Introduced in 2013, Proposition 39 (also called the California Clean Energy Jobs Act) allocated funding for schools for energy efficiency. Under the 5-year initiative, the California legislature makes available up to roughly $550 million annually to improve energy efficiency and expand clean energy generation in schools. Eligible local educational agencies (e.g., county offices of education, school districts, charter schools) can request funding by submitting an energy expenditure plan to the California Energy Commission, which must approve these plans before funding is distributed.[11] The 2013–14 cycle was the first year that Proposition 39 funding was available.

The following are the barriers schools' facilities face when implementing energy efficiency measures, as identified in the literature review (please note that many of the quotes below are from Optimal Energy 2013[12]).

- **Lack of project funding.** "One of the most commonly cited barriers to the implementation of … energy efficiency … projects is the lack of adequate funding to move forward" (Optimal Energy 2013). Energy

[11] http://www.energy.ca.gov/efficiency/proposition39/.

[12] The Optimal Energy report was the most comprehensive of all literature reviewed and is referenced throughout this section. Although the report focuses primarily on New York schools, these market barriers are general to the school sector. Findings were based on an informal poll of New York state school business officials conducted in June 2013.

projects face competition for funding with other school needs, so they rarely receive priority because districts tend to invest in areas to improve education quality rather than energy efficiency, as it is typically not part of a school's mission statement. This persists when schools lack energy policies or objectives that detail energy cost objectives or detail staff responsibilities for energy consumption. This barrier is consistent in higher education as well. Based on a survey of higher education facilities managers in 2015, insufficient funding (52%) and the inability to provide an acceptable ROI to procure funding (46%) were cited by about half of those polled as one of the top three obstacles to achieving energy efficiency goals (Redshift Research, Schneider Electric, and the Alliance to Save Energy). Additionally, energy efficiency products that cost more upfront but save money in energy costs over time can face a challenging approval process: "Even though schools sometimes can factor in long-term costs, districts often have difficulty justifying higher capital costs for green attributes" (Syphers 2003).

- **Lack of awareness of energy savings opportunities.** "Lack of awareness of energy saving opportunities is prevalent in schools. In many school districts, administrators and facilities staff are simply unaware of opportunities for energy saving capital improvements … [and] … improved operation and maintenance practices" (Optimal Energy 2013). Without crucial information, such as energy costs or how costs compare to other schools, staff cannot detect energy system failures or identify areas of waste in their buildings: "[F]acilities managers and business officials do not always realize the magnitude of the impact that good energy management can have on their district's budget" (Princeton Energy 2004).

- **Lack of awareness of financial benefits (and facility staff lack crucial information).** "Even if school staff are aware of available energy efficiency … opportunities, they may not possess a level of understanding of the financial benefits associated with those improvements necessary to motivate action…. [T]his lack of awareness is understandable as the impacts of efficiency investments are largely invisible unless consciously tracked. The problem is exacerbated by the fact that energy bills for the majority of school districts are handled by the central district office without any involvement by staff charged with the operation of the energy-consuming equipment" (Optimal Energy 2013).

- **Lack of technical expertise and building information.** "While facilities or other school district staff may recognize the potential benefits of pursuing energy saving opportunities, they may not have the technical expertise to initiate the planning and implementation processes. Pursing energy performance upgrades most efficiently requires a specialized skillset to identify, analyze, prioritize, select, and manage upgrades. Facilities staff do not always have the necessary skills, possess the necessary building intelligence, or know who to work with to carry out a successful project. As related by [the New York State Energy Research and Development Authority], one of the most common barriers encountered by schools is a "lack of information about what they should be doing' " (Optimal Energy 2013).

- **Lack of adequate time and staff (someone is needed to shepherd projects to completion).** "Successful energy cost savings projects typically require an 'on-the-ground' advocate at the facility to shepherd the projects to completion. However, the reality at many school districts is that facilities' staff are consumed with day-to-day operations. The majority of schools districts do not have dedicated energy managers and energy management responsibilities typically fall to normal facilities staff. Without clearly defined energy management roles and responsibilities, there may be a lack of accountability regarding energy cost control" (Optimal Energy 2013). Efficiency planning is generally viewed as an additional effort and not prioritized.

- **Project approval requirements or procedures.** According to Redshift Research 2015, among higher education staff, 59% of higher education professionals see organizational or administrative barriers such as procedures as the biggest obstacle to achieving their school's energy efficiency goals. "While 92 percent of respondents stated that their school had a culture that encourages energy efficiency practices, organizational barriers are challenging their ability to achieve efficiency goals. Fifty-nine percent view this as the biggest obstacle, with insufficient funding and lack of a clear definition of success also ranking highly" (Hardesty 2015). Related, Syphers (2003) reported that procedures were a barrier that impeded allocating funding to efficiency: "Municipal operations and capital budgets often tend to be allocated through different processes and even derived from different funding sources. As a result, it is usually challenging to transfer funds between the two accounts. This is a significant barrier to implementation of many green practices, especially those that might cost more up front, but save money over the life of the building." In New York City schools, the time is takes to implement energy efficiency measures can be quite long, due to a variety of factors, such as "the permitting process of the [New York State Education Department], holding public votes to secure funding for school products, and working around the constraints of the school year. Combined with the general barriers of limited program staffing and funding, developing projects in schools can be an uphill battle" (Optimal Energy 2013).

When queried, PREPPS participants said that the most commonly mentioned barrier to pursuing gas savings upgrades (mentioned by 11 of 18 respondents, or 61%) was lack of funds to pursue a project, consistent with the literature review findings. Two or fewer participants mentioned each of the following other barriers, which align with the literature review findings as well: lack of knowledge, poor ROI, and lack of time and staff resources. Additional barriers raised include an aging infrastructure as a barrier (which can make upgrades risky or overly complicated) and difficulty in completing application paperwork. Participants did not bring up project approval as a barrier by participants. However, one-third (6 of 18 participants) said that getting energy efficiency upgrades approved at their school was somewhat or very difficult and required several decision makers or layers of decision-making, lending some credibility to the project approval requirements or procedures barrier raised in the literature review.

The program completed projects with 40 unique participants throughout 2013–14 and reached 42% of its therm goal, based on the CPUC's Program Database. Table 27 presents actual savings and program spending information.

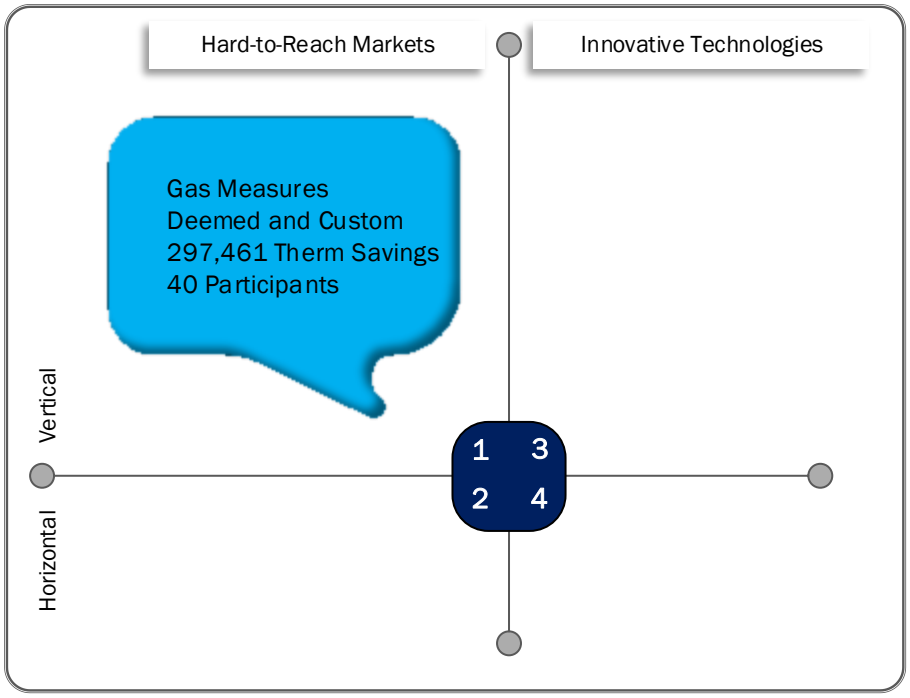
Table 27. PREPPS Performance Statistics

	Spending	kWh	kW	Therm
Goal (a)	$1,780,368	0	0	703,788
Actual	$1,198,660 (b)	0 (b)	0 (b)	297,461 (b)
% Goal Achieved	67%	N/A	N/A	42%
Actual per Participant (n=40)	$29,966	N/A	N/A	7,437

(a) IOU Monthly Energy Efficiency Programs Report from December 2014
(b) CPUC's Program Database, version from 11-02-2015.

Figure 9 summarizes some of the program characteristics. The program targets a specific vertical sector—schools—and is therefore placed in Quadrant 1.

Figure 9. PREPPS Characteristics



Implementation

The implementer conducts the following:

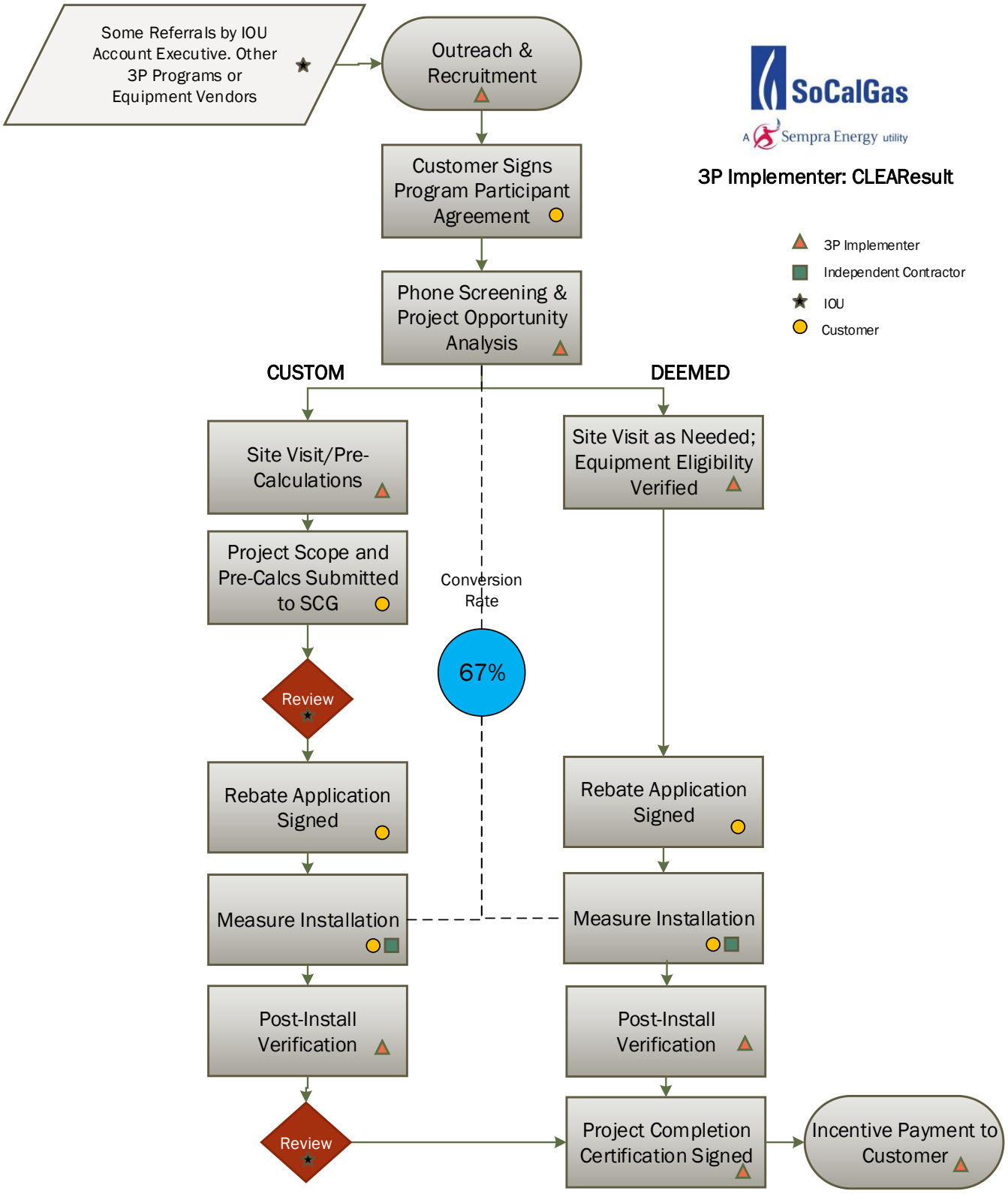
- Marketing
- Phone screening
- Walkthrough site inspection and project opportunity analysis
- Liaison with contractors/equipment vendors who install measures
- Verification/QA: Implementer does a random inspection of 30% of deemed projects and inspects 100% of custom projects

The implementer, SoCalGas account representatives, and equipment vendors market the program to prospective participants. The implementer's marketing campaigns include telemarketing, emailing, and networking through industry events and associations. The program does not coordinate with LGPs or Core or other 3P programs. IOU staff does not see the need for cross-promotion with SoCalGas' Core programs, but highlights that measures related to thermal solar (e.g., solar hot water heating) might be a good add-on to 3P program offerings in the future. Although the program does not formally coordinate with other programs, 8 of 18 respondents reported in the participant survey that the implementer recommended other resources or rebates for energy efficiency upgrades.

The program implementation model in Figure 10 outlines the key implementation steps involved from the first step of finding customers to the final step of completing an energy efficiency project. According to program implementation staff, schools come to the program differently. Some have measures/projects in mind already and just want program rebates while others may need a little more assistance. Depending on the project, participants may follow either a deemed or custom rebate track.

According to program-tracking data, the program's conversion rate (from audit to installation) is 67%.

Figure 10. PREPPS Implementation Model



Participant Feedback on Program Value and Effectiveness

The evaluation team identified 39 unique service account IDs for PREPPS in the CPUC's Program Database.[13] However, the data review revealed several duplicate contact names or duplicate phone numbers, as some school district employees oversaw projects in multiple schools. For fielding this survey, we removed these duplicate entries and records with missing contact information, and established a sample frame of 27 unique participants defined by phone and contact name.

Given the small samples size, a trained analyst called the entire sample and completed 18 interviews for a completion rate of 67%. These 18 respondents represented 62% of all sites defined by unique address and 66% of total energy savings (MMBTU).

Value

Table 28 presents the key program features designed to help schools make gas savings upgrades. The table also shows how many participants did not receive a given a feature. In this case, one participant did not receive the Product Recommendations, and two said they did not receive the implementer's Sector Expertise or Information for Decision-making. This is not surprising given the multiple ways participants enter the program (i.e., some desire just the program rebate while others need more assistance).

Table 28. PREPPS Program Features

Program Feature	Survey Wording	Did Not Receive Feature (n=18)
Rebate	Incentives to help offset project costs	0
360 Project Assistance	Someone to assist with all aspects of the project from beginning to end	0
Audit/Identify Energy Savings	Help to identify gas saving opportunities at your school	0
Product Recommendations	Help to select the right gas saving upgrades for your school to save energy	1
Sector Expertise	Advice from someone who is knowledgeable about gas saving upgrades in school	2
Information for Internal Decision-Making	Information to help you get the project approved internally	2

Participants who recalled receiving a given program feature rated its importance on a scale from 0 to 10, where 10 means a feature was "critically needed" to execute the energy efficiency project and 0 indicated that "it was not needed at all." Table 29 presents the distribution of participant scores and the average importance score for each program feature. There were no optional program features measured in the survey.

Table 29. PREPPS Importance Scores

Program Feature	Importance Score (a)				Mean Importance Score	Standard Deviation
	Don't Know	0–3	4–6	7–10		
Rebate (n=18)	0	3	2	13	7.3	3.2

[13] The evaluation team used the CPUC's Program Database from May 2015 to develop the survey sample. This database version included claims from January 2013 to December 2014, but was not the final database for the 2013-14 cycle. As a result, we identified 40 unique service account IDs when developing the sample, but 39 in the final program database when determining the total number of participants as shown the Program Design section.

Program Feature		Importance Score (a)				Mean Importance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
	360 Project Assistance (n=18)	0	4	4	10	6.7	3.1
	Product Recommendations (n=17)	0	3	8	6	5.5	2.5
	Sector Expertise (n=16)	0	4	3	9	6.1	3.2
	Information for Internal Decision-Making (n=15)	0	4	4	7	6.1	3.2
	Audit/Identify Energy Savings (n=18)	0	6	6	6	4.9	3.0
	Overall Mean Importance Score					**6.1**	

(a) Scale: 0–10, where 0 is "not needed at all" and 10 is "critically needed" to upgrade to more energy-efficient products. Mean importance scores do not include "Don't Know" responses.

Only the rebate feature received a strong importance score (7.3), further confirming that cost is the most common barrier to making gas savings upgrades in schools. 360 Project Assistance received a moderate score of 6.7, which reflects a polarization in scores by participants. Given that some participants come to the program with projects already in mind and are just looking for the rebates (thereby not requiring much assistance), while others require more hands-on assistance, it makes sense that participants would value this need differently.

The other four program features received moderate scores between 4.9 and 5.5. Again, these scores reflect a polarization from participants. The percentage of participants giving low, medium, and high scores is rather spread out over these four features, indicating a diversity of needs in this sector.

Effectiveness

Table 30 presents the same key program features and shows how participants rated the implementer's performance of each feature on a scale from 0 to 10, where 10 represents excellent performance. Participants consistently gave high performance scores for all program features (average scores are 8.7 or above). In general, four in five participants gave high performance scores of 7 or better across all features, as shown by the percentage of participants in the "7–10" column below.

Table 30. PREPPS Performance Scores

Program Feature		Performance Score (a)				Mean Performance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	Rebate (n=18)	0	1	0	17	9.2	1.7
	Information for Internal Decision-Making (n=15)	0	0	2	13	9.0	1.6
	360 Project Assistance (n=18)	0	1	1	16	9.0	1.9
	Sector Expertise (n=16)	0	0	2	14	9.0	1.6
	Audit/Identify Energy Savings (n=18)	0	0	2	16	8.9	1.7
	Product Recommendations (n=17)	0	0	2	15	8.7	1.8
	Overall Mean Performance Score					**9.0**	

(a) Scale: 0–10, where 0 is "very poor" and 10 is "excellent." Mean performance scores do not include "Don't Know" responses.

Recommendations to Improve the Program

When asked if the program could have provided any other features that would have been helpful, about one-third of participants (4 of 18) responded "yes." The other two-thirds said "no" and many emphasized again how great the program was. Those with recommendations wanted a larger list of participating contractors/vendors, more program funding, and more information on what other districts are doing (and to bring together energy managers from other schools to share what each is doing). One participant requested pre-engineering to help identify items that would be beneficial to the district to save energy.

All Participants Would Recommend the Program

All participants said that they would recommend the program. Although half of participants mentioned the rebate or cost savings as a reason that they would recommend the program, many (14) mentioned additional reasons. These included financial benefits and other characteristics related to program assistance, for example, how easy it was to participate in the program and how great the implementer was at walking participants through the participation process and really making sure projects are completed.

Anecdotal evidence points to excellent service provided by the implementer.

> *The [implementer] did follow up to make sure that we completed the paperwork and completed it on time. If a follow-up visit was scheduled, [the implementer] followed up with us on it. – Participant*

> *It was the easiest program I've been involved with. Everybody was knowledgeable, easy to get a hold of, walked us through the process. It was seamless. – Participant*

> *[The program] provided an inspection and gave additional input for savings. – Participant*

Table 31. Reasons Respondents Would Recommend PREPPS

Reason	Total Respondents (a)	I would recommend the program because…
Additional Funding or Cost Savings	9	*It provided extra funding to take care of upgrades that otherwise we wouldn't have been able to fund.*
Ease of Implementation/Ease of Use	7	*Of simplicity, ease of use. Ease of Implementation.*
Project Assistance	3	*CLEAResult makes it easy by walking us through the process.*
Pushed Project through to Completion	2	*For 8–9 years, the program has tried to show us the savings opportunities available. We did not listen. Going through the program, we realized the savings were real.* *CLEAResult makes it nice by walking us through the process.*
Decision-Making Information	1	*The incentives are nice and you get a 20% bonus. Small districts are looking for financial reasons to move forward on a project so it helps in the decision-making process.*
Assistance with Paperwork	1	*The ease of use and the easy ability to get their applications approved.*
Provided Good Information	2	*It gives good advice.*
Environmental Benefits	1	*We want to be good stewards for the environment.*

(a) Participants gave multiple reasons why they would recommend the program.

Program Challenges

Even though satisfaction with the program was high and all participants would recommend it, participants experienced four minor challenges while participating in the program. Some related to their school district's approval process and technical issues with the equipment that were caused by the equipment manufacturer and installation contractor. One participant noted issues with the rebate processing time and project approval process. However, these issues seem minimal as only one participant noted this.

Table 32. Program Challenges as Expressed by Participants (multiple response)

Challenge	Participants (n=4)
Delay in approvals within the school district	2
Delay in receiving pool cover (manufacturing issue) and complications in putting together the pool cover equipment	1
Project approval took 4–5 months (on the program implementer side)	1
Delay in receiving rebate check (took over 6 months)	1

2.2.6 EnovitySMART

Summary of Findings

Below are key take-aways from case study findings related to PG&E's PY2013-14 School Energy Efficiency Program.

Program Characteristics & 2013-14 Performance Statistics

- This program targets small and medium schools and municipal facilities under 100,000 square feet.
- The program emerged under the IDEEA365 umbrella to promote innovate technologies and delivery models. It also has a direct install component. The literature review findings in the case study fully aligned with the market barriers that this program is attempting to address.
- The program achieved ex ante energy savings of 1,214 MWh, 54 kW, and 79,369 Therm. The combined savings (MMBTU) represent 1% of all active 2013-14 3P Commercial programs. PG&E did not establish a savings forecast for IDEEA 365 programs.
- The program reached 16 participants with an average spending of $46,986 per participant.
- The program's conversion rate from audits to completed projects was moderate at 44%.

Participant Feedback on Value and Effectiveness

The table below presents key take-aways from exploring the value of program design features to help schools upgrade to more energy efficient products. It also summarizes the implementer's effectiveness in delivering those services from the participant perspective.

Survey Topics	Participant Feedback		Program Implications
Core Technical Assistance Features (a)	Data indicate these are highly needed, only information for decision-making is moderately needed	Data indicate the implementer is highly effective at delivering these features	No action needed
Direct Install Feature	Data indicate this highly needed	Data indicate the implementer is highly effective at delivering direct install services	No action needed
Optional Financial Assistance (Rebate) for Further Upgrades	Data indicate this is moderately needed	Data indicate the rebate level is highly effective	No action needed as this feature is optional and findings indicate a diverse market need
Performance and Value Alignment	Value and performance aligned well		No action needed
Participant Need for Other Program Features	▪ 70% describe current design as sufficient ▪ Suggestions for more trouble-shooting assistance and training on programming.		Consider more assistance/training
Likelihood to Recommend Program	All would recommend the program		Consider more contractor and project scoping assistance
Challenges During Participation	Finding a contractor, defining scope of work		

(a) Audit/Identify Energy Savings, ROI Analysis, 360 Project Assistance, Sector Expertise, Product Recommendations, Information for Internal Decision-Making

Program Design

EnovitySMART is the largest[14] of four analytics-enabled retrocommissioning (AERCx) PG&E programs that originated from the Innovative Design for Energy Efficiency Activities 365 (IDEEA365) solicitations. IDEEA 365 is an IOU solicitation process that provides a platform for bidders to submit proposals for new "targeted" or "innovative" technologies and unique delivery approaches. Unlike traditional retrocommissioning (RCx) programs, which involve on-site audits, AERCx programs use remote data analytics to identify energy savings opportunities portfolio-wide. This makes the cost of identifying potential participants much lower than if an on-site audit were required for each individual facility. According to the IOU Program Manager, due to the on-site audit requirement, the Core RCx Program does not consider RCx for smaller facilities cost-effective under standard evaluation, measurement, and verification (EM&V) procedures and will therefore generally not serve these customers.

EnovitySMART targets small and medium schools and municipal facilities under 100,000 square feet (sf) in Alameda and San Mateo counties and functions as a proof-of-concept program, generating energy savings in this hard-to-reach market. The program tests the concept of using data-driven remote building assessments to identify energy savings from RCx in smaller facilities. Via a Gridium software tool,[15] EnovitySMART conducts web-based site assessments using smart meter data provided by PG&E. Schools and municipalities typically

[14] Defined in terms of contract size and total program savings goals.

[15] http://gridium.com/.

lack the resources (monetary, personnel, or energy efficiency knowledge) to install energy efficiency upgrades on their own.

Enovity directly implements select repair and optimization measures in-house with its own technical staff.[16] Customers can therefore achieve energy savings without capital investments or major time commitments from school or municipality operations and maintenance staff. The program also offers continuous monitoring of building performance and monthly tune-ups for program participants, which has helped resource-restricted schools and municipalities pursue deeper retrofits. EnovitySMART is the only PG&E AERCx program with a direct install component.

A literature review of RCx activities found that, besides cost, time, and knowledge (which are also the main barriers to energy efficiency affecting the school sector), barriers to RCx relate to RCx being in its early stages, i.e., the uncertaintities and lack of understanding of its costs and benefits. The following are the barriers identified in the literature review that facilities face when implementing RCx measures.[17]

- **Upfront cost.** Many reports cited that the costs for RCx studies (to determine appropriate energy-saving actions) exceed building operation budgets (Chiodo 2015; Dodds, Baxter, and Nadel n.d.; Hounsell 2014; Research Into Action, Inc. 2009; Tiessen 2014). Additionally, "… building owners cannot easily determine the potential value of such studies or understand the quality and content that is necessary to support an energy efficiency investment. This makes many customers reluctant to invest $20,000–$70,000 in an engineering study" (Dodds, Baxter, and Nadel n.d.).

- **Lack of time.** Two reports indicated that facilities staff lack the time to implement RCx services, and that "… short-planning horizons, and institutional inertia makes it difficult for owners and managers to consider new approaches" (Dodds, Baxter, and Nadel n.d.; Research Into Action, Inc. 2009).

- **Lack of awareness/understanding.** Many reports indicated that there is a lack of familiarity with the services and benefits of RCx (Dodds, Baxter, and Nadel n.d.; Hounsell 2014; Research Into Action, Inc. 2009; Tiessen 2014).

- **Lack of a "track record" for RCx services.** One report (Dodds, Baxter, and Nadel n.d.) indicated that many owners and managers claim that RCx services are "too good to be true" since RCx services have not been "demonstrated enough." Additionally, for most facilities, there lacks an "established budget, procurement vehicle, internal responsibility, management system, contractor relationship, or precedent for procuring retrocommissioning services" (Dodds, Baxter, and Nadel n.d.). "Contractors also lack procedures for defining managing, marketing, or making a profit from these services" (Dodds, Baxter, and Nadel n.d.). Those who can lead RCx efforts are in limited supply (Dodds, Baxter, and Nadel n.d.).

- **Uncertainty and potential lack of persistence of energy savings.** One report (Dodds, Baxter, and Nadel n.d.) indicated that a "common RCx measure is to develop reset schedules for static pressure or system temperatures. These reset schedules are programmed into the building automation system. And the savings are at risk from the moment they are programmed in—is the program right? Did the operator override the program? Did the controller go down and get reprogrammed with a standard program rather than the correct efficient program?"

[16] This includes no- or low-cost energy measures, such as equipment scheduling or control sequence changes.

[17] Given its nascent state, there were no reports identified that focused specifically on AERCx. The literature review therefore focuses on RCx broadly.

Participants confirmed several of the barriers raised in the literature review. Costs associated with identifying and implementing RCx measures were the most common barrier (mentioned by 6 of 8 participants). Some participants also expressed challenges with the project approval process (3), a lack of time to pursue upgrades (2), and a slow implementation process, including having to draw up retrofit plans and apply for Proposition 39 funding[18] (1). One participant brought up technical issues, such as having to stop operations to implement the RCx measures or figuring out how to apply RCx to an antiquated piece of technology so that the project is cost-effective for the participant and the program.

> *The approval process adds some complexity because budgets are predetermined and the projects may not take priority due to other departments that might take a higher priority.*
> *– Participant*

The same barriers that apply to the school sector also apply here and are similar to the barriers identified above for RCx. A literature review of the school sector found the most common barriers to energy efficiency to be lack of project funding and the lack of knowledge related to energy savings opportunities, benefits, and implementation. This program is one of three school programs included as a case study in this evaluation effort; a literature review of the school sector is available in the SEEP or PREPPS program chapters of this report.

The program completed projects with 18 participants (defined by unique service account IDs) throughout 2013–14. Table 33 presents actual savings and program spending information based on ex ante savings data in the CPUC's Program Database. The program had a late start (commencing in late 2013), and according to the implementer, the initial cycle time of just over 1 year does not suffice to develop program processes, build a project timeline, and complete enough upgrades to reach the forecasted savings goals. The program received a 6-month extension to June 2015 to help the implementer generate additional savings; however, Table 33 reports progress through the end of 2014 only.

Table 33. EnovitySMART Program Performance Statistics

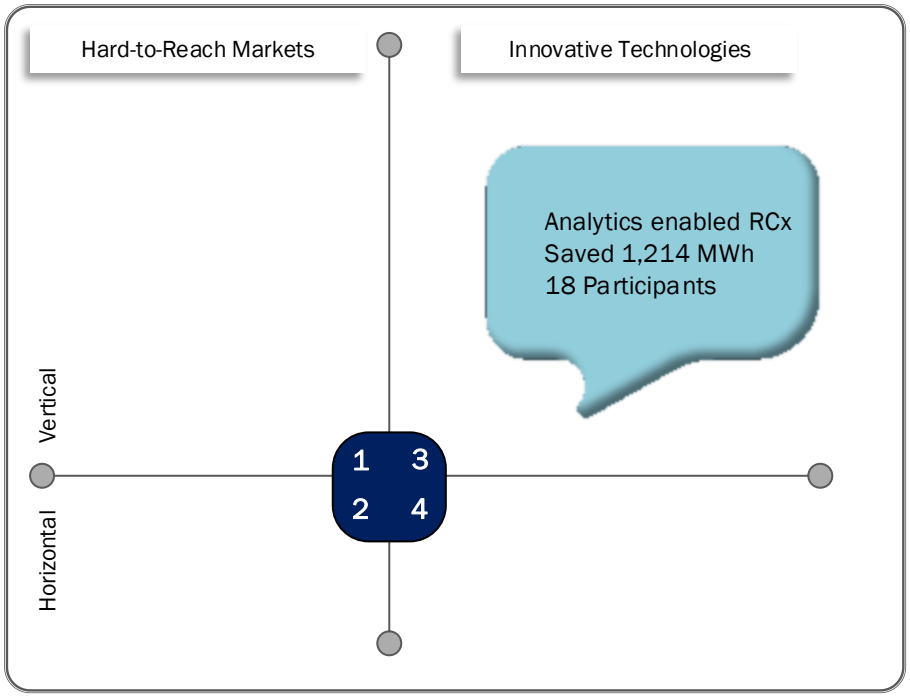
	Spending	kWh	kW	Therm
Goal (a)	$1,894,532	0	0	0
Actual	$845,743(b)	1,213,902 (b)	54 (b)	79,369 (b)
% Goal Achieved	45%	N/A	N/A	N/A
Actual per Participant (n=18)	$46,986	67,439	3	4,409

(a) IOU Monthly Energy Efficiency Programs Report from December 2014; (b) CPUC's Program Database, version from 11-02-2015. The number of participants is based on unique service account IDs.

Figure 11 summarizes some of the program's characteristics. The program is placed in Quadrant 3 because it targets specific vertical sectors—schools and municipal buildings—and is an innovative program design.

[18] This issue applies just to schools and would remain only for the life of Proposition 39 funding, which is slated to end after 5 years, or in 2018.

Figure 11. EnovitySMART Program Characteristics



Implementation

As described above, the implementer offers EnovitySMART in the counties of Alameda and San Mateo, as other AERCx programs serve other counties in PG&E's service territory. The program operates separately from the Core RCx program that is available to large customers (>100,000 sf).

The implementer conducts the following:

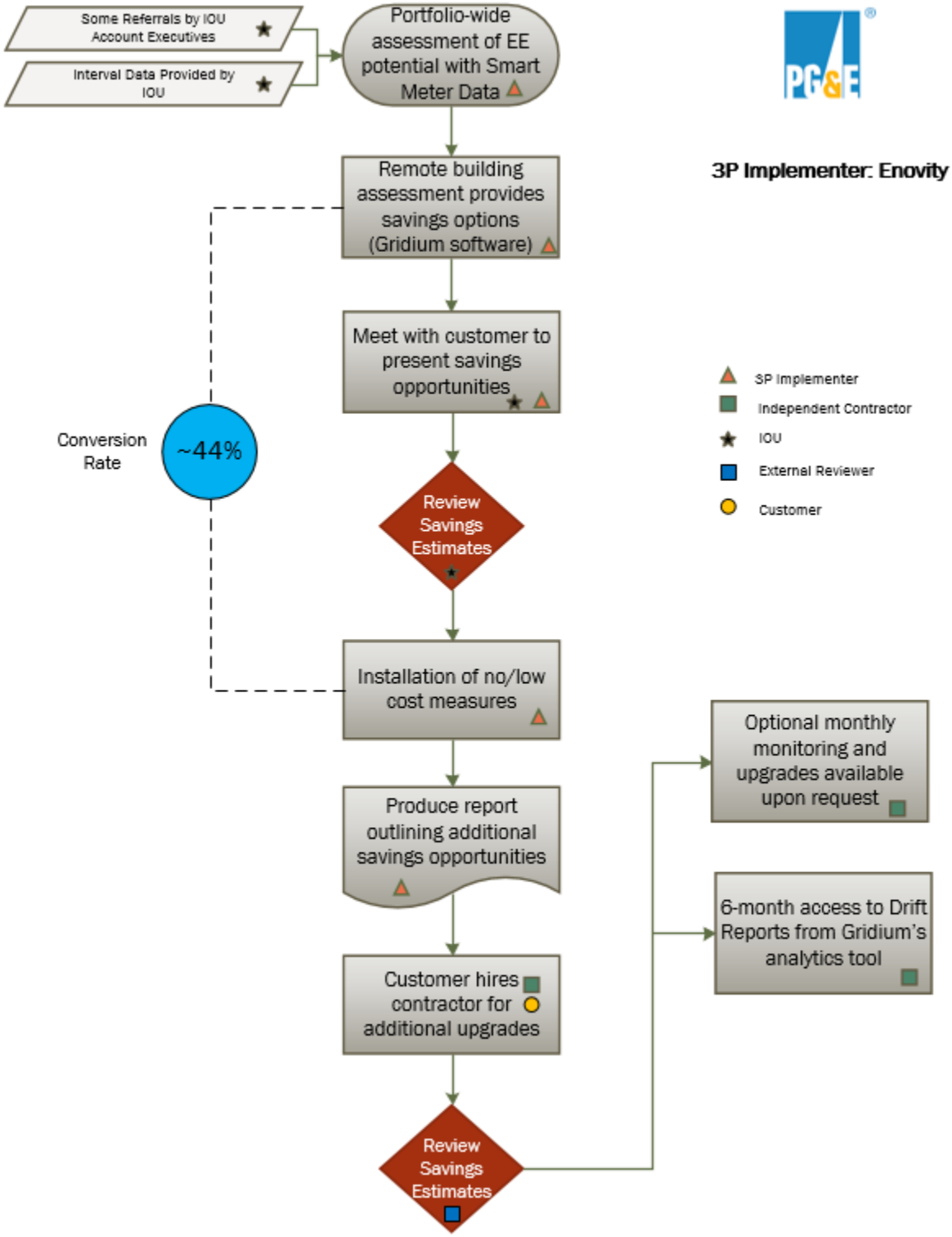
- Assessment of energy efficiency potential and web-based site assessment using smart meter data of customers in the program's territory
- Stakeholder engagement
- Technical assistance
- Implementation of RCx upgrades by Enovity technicians or contractors hired by Enovity
- Provision of an energy report with additional savings opportunities to the customer
- Monthly monitoring and follow-up upgrades upon request

The program implementation model in Figure 12 outlines the key implementation steps involved from the first step of finding customers to the final step of completing a RCx project. The program identifies potential customers in one of two ways: (1) the implementer uses data analytics to identify facilities with high savings potential and coordinates with PG&E to approach these entities or (2) the implementer relies on leads from PG&E account representatives to identify potential customers. PG&E provides the implementer with customer billing data to facilitate the analysis. Once a participant agrees to participate in the program and the implementer completes the web-based assessment, Enovity technicians visit the facility for the direct

implementation of no- or low-cost building optimization (e.g., equipment scheduling, control sequence changes, setpoints). The implementer also develops a projects report that includes estimated energy and cost savings, as well as a list of additional energy measures requiring some capital investment. For 6 months after the direct implementation, the program also provides customers with access to "Drift Reports" from the energy analytics tool (Gridium), which alerts the participant to post-implementation efficiency losses. According to the implementer, the program does have the capability to scope out an upgrade or retrofit project, bid the project, and perform the work with an incentive, although, according to the implementer, as of the date of the interview (March 2015) this was rare. According to program-tracking data, the program's conversion rate was approximately 44% for this program in the 2013–14 cycle.

Currently, the program does not coordinate with LGPs or Core or other 3P programs. However, the implementer coordinates with other energy efficiency programs in the school sector to prevent overlap. PG&E facilitates group meetings to support these coordination efforts. Survey findings indicate that the program referred three of eight participants reported to other rebates or programs for other energy efficiency upgrades.

Figure 12. EnovitySMART Implementation Model



Participant Feedback on Program Value and Effectiveness

The evaluation team identified 18 unique service account IDs for EnovitySMART in the CPUC's Program Database from May 2015.[19] However, the data review revealed several duplicate contact names or phone numbers, as some school district employees oversaw projects in multiple schools. For fielding this survey, we removed these duplicate entries and records with missing contact information, and established a sample frame of nine unique participants defined by phone and contact name.

Given the small samples size, a trained analyst called the entire sample of nine contacts and completed eight interviews for a completion rate of 89%. These eight respondents represented 79% of all sites defined by unique address and 94% of total energy savings (MMBTU).

Value

Table 34 presents the key features the program uses to implement RCx in schools and municipal buildings. The table also shows how many participants did not receive a given feature. The majority of customers received all services. However, two participants did not recall receiving help to calculate the costs and payback of RCx upgrades, and three reported that they did not receive financial assistance to help offset project costs. This is possible given that the program provides participants with a report of optional upgrade recommendations, but not all participants pursue these upgrades after receiving the no-cost direct install services.

Table 34. EnovitySMART Program Features

Program Feature	Survey Wording	Did Not Receive Feature (n=8)
360 Project Assistance	Someone to assist with all aspects of the project from beginning to end	0
Sector Expertise	Advice from someone who is knowledgeable about retrocommissioning in schools or municipalities	0
Product Recommendations	Help to select the right retrocommissioning upgrades for your facility to save energy	0
Audit/Identify Energy Savings	Help to identify retrocommissioning opportunities in your facility	0
Direct Install	The program to do the retrocommissioning upgrades for you (as opposed to you hiring a contractor)	0
Information for Internal Decision-Making	Information to help you get the project approved internally	1
ROI Analysis	Help to calculate the costs and payback of retrocommissioning upgrades	2
Financial Assistance	Financial assistance to help offset project costs	3

Participants who recalled receiving a given program feature rated its importance on a scale from 0 to 10, where 10 means a feature was "critically needed" to execute the energy efficiency project and 0 indicated that "it was not needed at all."

[19] The evaluation team used the CPUC's Program Database from May 2015 to develop the survey sample. This database version included claims from January 2013 to December 2014, but was not the final database for the 2013-14 cycle. Nevertheless, the number of unique service account IDs is consistent between these two database versions.

The results point to how important the program features related to technical knowledge and technical assistance were to participants. The top five program services were such features: ROI Analysis, 360 Project Assistance, Sector Expertise, Product Recommendations, and the Audit to Identify Energy Savings all scored approximately 8 or higher. The Direct Install feature also scored well with 7, indicating that it was also highly valued. Participants receipt of free assessments is reflected in a lower score for Information for Decision-Making, as there is no need for detailed cost information if services are provided for free.

The one optional feature of the program, Financial Assistance, received the lowest score of all, and reflects several participants who may have received just the free assessment or controls upgrades without equipment upgrades. The results from the measure of Financial Assistance for this particular program may also reflect some participants who may have used Proposition 39 funding to complete the projects, and therefore received little direct financial support from the program itself. For the other school programs reviewed in this study (SEEP and PREPPS), cost was the number one barrier. As these other programs are dollar per widget programs, it is common for cost to be a main factor in the decision to pursue upgrades. For a RCx type program, technical assistance appears to be valued much more highly than financial assistance.

The district needs a lot of help. Enovity really explained the program, and really helped the district learn how to save energy. – Participant

These findings indicate that in pursuing RCx in schools and municipal buildings, technical knowledge and technical assistance are critical needs. RCx measures are simply more complicated and require a high degree of technical expertise to implement correctly. Programs must offer a high degree of technical knowledge and technical assistance as the technology is, in many respects, still being demonstrated and is very nuanced and technically advanced in nature. The scores also indicate that schools and municipalities need a lot of help to learn how to save energy through RCx.

Table 35. EnovitySMART Importance Scores

Program Feature		Importance Score (a)				Mean Importance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	ROI Analysis (n=6)	0	0	1	5	8.7	2.0
	360 Project Assistance (n=8)	0	0	1	7	8.5	1.5
	Sector Expertise (n=8)	0	0	1	7	8.1	1.6
	Product Recommendations (n=8)	0	0	2	6	8.0	1.9
	Audit/Identify Energy Savings (n=8)	0	0	3	5	7.9	1.8
	Direct Install (n=8)	0	0	3	5	7.0	2.1
	Information for Internal Decision-Making (n=7)	0	1	1	5	6.4	3.0
	Overall Mean Importance Score					**7.8**	
Optional	Financial Assistance (n=5)	0	1	2	2	4.8	2.5

(a) Scale: 0–10, where 0 is "not needed at all" and 10 is "critically needed" to upgrade to more energy-efficient products. Mean importance scores do not include "Don't Know" responses.

Effectiveness

Table 36 presents the same key program features designed to implement RCx in schools and municipalities and shows how participants rated the implementer's performance of each feature on a scale from 0 to 10, where 10 represents excellent performance. Participants consistently gave high performance scores for all program features (8.0 or above), indicating that the implementer is highly effective at delivering the program. One participant also mentioned that the program helped to build a relationship with the PG&E Account Representative, which the company valued very highly (Importance Score of 10). This participant mentioned that the implementer performed very well in this regard (Performance Score of 10).

Table 36. EnovitySMART Program Performance Scores

Program Feature		Performance Score (a)				Mean Performance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	ROI Analysis (n=6)	0	0	0	6	8.7	1.2
	360 Project Assistance (n=8)	0	0	0	8	8.5	1.2
	Sector Expertise (n=8)	0	0	1	7	8.5	1.5
	Audit/Identify Energy Savings (n=8)	0	0	1	7	8.4	1.2
	Product Recommendations (n=8)	0	0	1	7	8.1	1.5
	Direct Install (n=8)	0	0	0	7	8.1	1.4
	Information for Internal Decision-Making (n=7)	0	0	0	5	8.0	1.6
	Overall Mean Performance Score					**8.3**	
Optional	Financial Assistance (n=5)	0	0	0	8	8.2	1.2

(a) Scale: 0–10, where 0 is "very poor" and 10 is "excellent." Mean performance scores do not include "Don't Know" responses.

Consistent with high performance scores, all eight participants said that they would recommend the program to others. Half of the participants emphasized that they would recommend the program because it was easy, seamless, and inexpensive or free for the participant. The others emphasized excellent technical support, great work by the implementer, and decision-making assistance.

> *[I would recommend the program] because the program pays for everything and Enovity has some good engineers who are diligent and will find out the program and solution. They also manage the contractor. It's good service. – Participant*

> *[I would recommend the program] because it's straightforward. The program can identify energy savings without having to do a major capital improvement. – Participant*

> *The program provided a level of insight that is carefully detailed to identify sources of operational issues. It asks well-informed questions, and proposes actions that are based on a blend of judgment and data, and does further analysis as warranted. – Participant*

Even though satisfaction with the program was high, participants faced several implementation challenges related to deciding on the appropriate scope of work (two participants); selecting/finding a contractor to do the work (two participants); and getting approval from the school district, a process that can take 6 months (two participants).

Half of the participants elected to have continuous monitoring and of those four, three are planning to complete or have completed additional analysis; only one has made additional adjustments. Of the four who

did not elect to monitor, one did not know it was an option and the other two did not need it (one explained another program is monitoring usage for them; the other is moving forward with additional retrofits that would make any monitoring out of date). This shows that not all schools and municipalities are opting for this free service.

2.2.7 SW-COM Direct Install

Summary of Findings

Below are key take-aways from case study findings related to SDG&E's PY2013-14 Direct Install Program.

Program Characteristics & 2013-14 Performance Statistics

- This program targets small and medium businesses with annual peak demand below 100 kW feet.
- The program offers direct install services. The literature review findings in the case study aligned with the market barriers that this program is attempting to address.
- The program achieved ex ante energy savings of 36,377 MWh, and 9.5MW. The combined savings (MMBTU) represent 10% of all active 2013-14 3P Commercial programs. The program's energy savings exceeded SDGE's forecasts.
- The program reached 5,186 participants with an average spending of $4,563 per participant.
- The program does not track the data required to calculate a conversion rate from audits to converted projects.

Participant Feedback on Value and Effectiveness

The table below presents key take-aways from exploring the value of program design features helping small and medium businesses to upgrade to more energy efficient products. It also summarizes the implementer's effectiveness in delivering those services from the participant perspective.

Survey Topics	Participant Feedback		Program Implications
Core Technical Assistance Features (a)	Data indicate these are moderately needed	Data indicate the implementer is highly effective at delivering these features	Diverse need for services in the target market; some better targeting may be needed
Direct Install Feature	Data indicate this is highly needed	Data indicate the implementer is highly effective at delivering direct install services	No action needed
Financial Assistance (Free Measures)	Data indicate this is highly needed	Data indicate the provision of free measures is highly effective	No action needed
Performance and Value Alignment	Value and performance aligned well		No action needed
Participant Need for Other Program Features	▪ 71% describe current design as sufficient ▪ Most common suggestions were more and better quality products		Consider if changes in measure mix align with State 3P program goals
Likelihood to Recommend Program	93% would recommend the program		Address work quality issues through inspection process
Challenges During Participation	Incomplete measure installation		

(a) Audit/Identify Energy Savings, 360 Project Assistance, Product Recommendations, Information for Internal Decision-Making. Optional features to help participants identify contractors and review their bids are not included in this summary because only one respondent used this feature.

Program Design

SDG&E's SW-COM Direct Install Program is designed to garner energy savings from hard-to-reach small and medium businesses that, according to program implementation staff, do not have the resources (monetary, personnel, or energy efficiency knowledge) to install energy efficiency upgrades on their own. There are two program implementers, Matrix Energy Services and Synergy Companies that operated in separate jurisdictions in the 2013–14 cycle. The program offers a wide range of deemed measures (lighting, refrigeration, HVAC) at no cost to participants and appeals to a broad range of customer types. Any non-residential customer (including commercial businesses, corporate-owned franchises, and schools) may participate provided they meet size requirements (less than 100 kW of annual peak demand). According to the program implementers, most participants are less than 20 kW in size, which they considered a hard-to-reach segment.

A literature review of small businesses found the following barriers when implementing energy efficiency products and measures.

- **Upfront costs to invest in energy efficiency.** Many reports considered upfront costs as one of the main barriers for small and medium businesses to install energy efficiency products (Itron, Inc. 2014; KEMA, Inc. 2008; Quantum Consulting Inc. 1999; The Cadmus Group, Inc. 2013; Turiel 2009; XENERGY Inc. 1999).
- **Lack of knowledge to assess upgrade opportunities.** Several reports indicated that customers in the small and medium business segment lack the expertise and knowledge to "comprehensively and confidently" (XENERGY Inc. 1999) assess the future benefits of energy efficiency products, services, and practices (KEMA, Inc. 2008; Quantum Consulting Inc. 1999; The Cadmus Group, Inc. 2013; XENERGY Inc. 1999). Some reports also indicated that small business customers' immediate priorities

do not include managing energy costs (The Cadmus Group, Inc. 2013; Turiel 2009; XENERGY Inc. 1999).

- **Search costs related to identifying energy efficiency products, services, and contractors.** Two reports discussed the costs related to acquiring information about energy efficiency products or services, including the amount of time it takes to identify, locate, and learn about them (KEMA, Inc. 2008; Quantum Consulting Inc. 1999). Other reports cited that getting energy efficiency information and picking a contractor presents an inconvenience to small and medium businesses (KEMA, Inc. 2008; Quantum Consulting Inc. 1999; XENERGY Inc. 1999).
- **Split incentives.** Three reports cited split incentives as a significant barrier to perform energy efficiency upgrades, because many small and medium businesses rent their facilities and are thus not responsible for building improvements. At the same time, building owners may lack the incentive to invest in energy efficiency upgrades when tenants pay their own utility bill and subsequently receive the financial benefit of the landlord's investment (Boice Dunham Group 2005; Quantum Consulting Inc. 1999; Turiel 2009; XENERGY Inc. 1999).

To help overcome these barriers, the program is completely free to participants, offering no-cost measures and a no-cost audit to help identify the most appropriate energy efficiency technologies for their business. The program also performs the direct installation of measures so participants do need not to search for a contractor on their own. Furthermore, the implementers proactively approach San Diego businesses to promote the program and cross-promote it with other programs, such as the CORE program, finance programs, and demand response initiatives. This program is one of the few 3P programs that offer a facility-wide ASHRAE Level 2 audit, which enables this program to identify a comprehensive set of measures and refer a number of customers to further energy savings and incentive opportunities.

The program completed projects with 5,186 unique participants throughout 2013–14 and exceeded all of its goals, based on ex ante savings data in the CPUC's Program Database. Actual savings and program spending information is presented in Table 37 below.

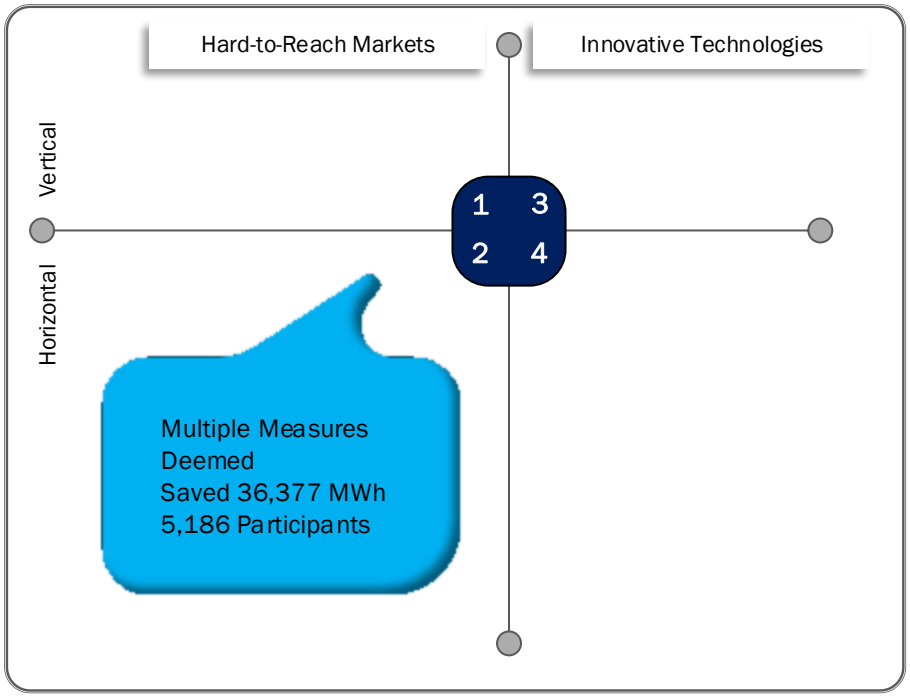
Table 37. SW-COM Direct Install Performance Statistics

	Spending	kWh	kW	Therm
Goal (a)	$23,792,028	31,820,791	7,794	−9,572
Actual	$23,664,426(b)	36,377,117 (b)	9,486 (b)	−10,428 (b)
% Goal Achieved	99%	114%	122%	109%
Actual per Participant (n=5,186)	$4,563	7,014	2	N/A

(a) IOU Monthly Energy Efficiency Programs Report from December 2014; (b) CPUC's Program Database, version from 11-02-2015. The number of participants is based on unique service account IDs.

Figure 13 summarizes some of the program characteristics. This program targets a broad, hard-to-reach market across different vertical sectors and as such is characterized as a Quadrant 2 program.

Figure 13. SW-COM Direct Install Characteristics



Implementation

Implementer Role

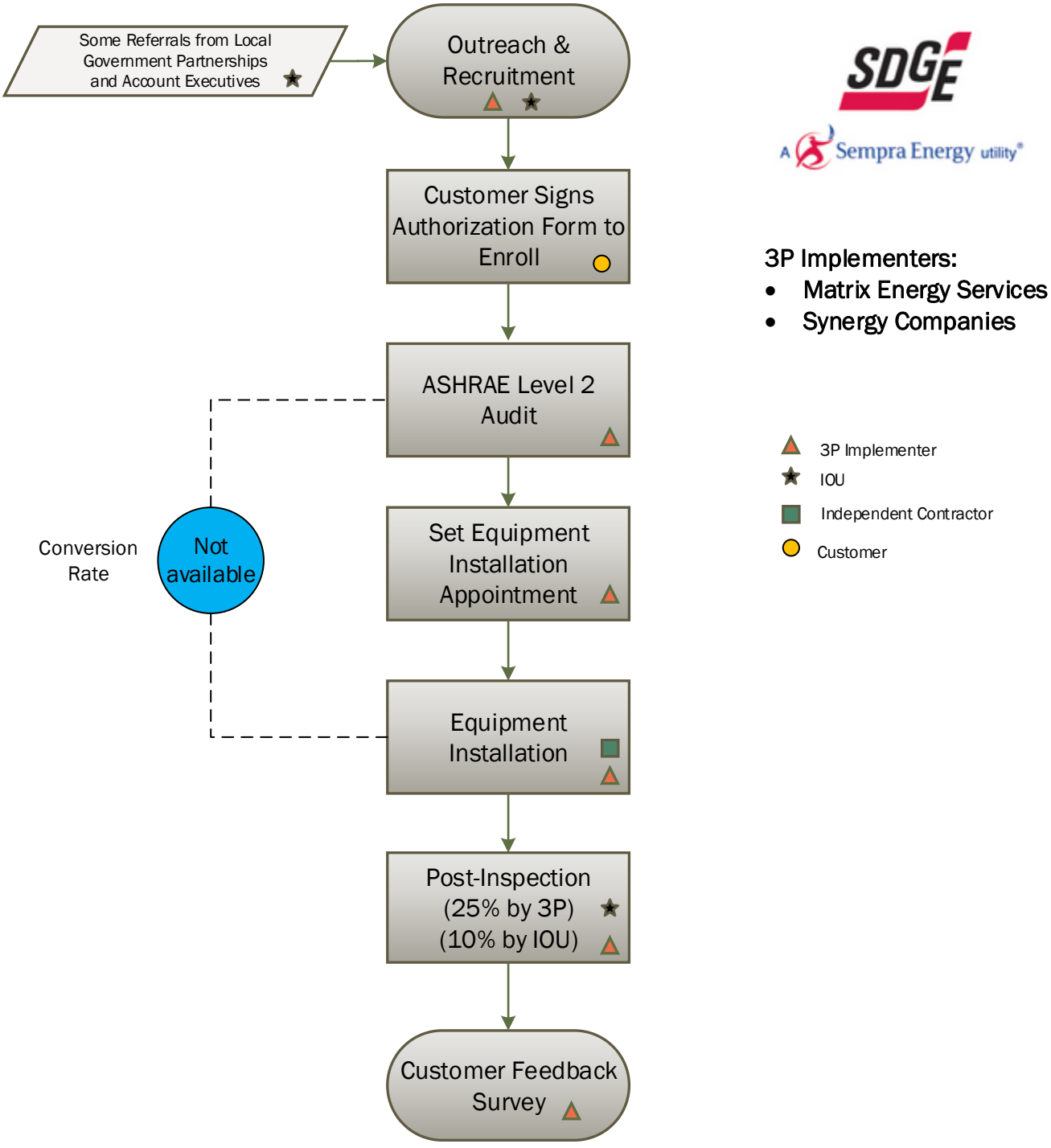
For this program, the implementer conducts the following:

- Marketing
- Audit and scheduling of installation within 2 weeks
- Installation of measures: 75% in-house and outsourced as needed
- Verification/QA: Implementer does a random inspection of 25% of projects
- Collection of customer feedback in survey: Customers fill out a customer feedback survey; feedback is mostly positive according to the implementer

Figure 14 outlines the key implementation steps involved from the first step of finding customers to the final step of completing an energy efficiency project. The program recruits through a mixture of on-the-ground canvassing by implementers; referrals by SDG&E and past participants; and via LGPs, such as the Chula Vista Chamber of Commerce, which promotes the program to small and medium businesses that participate in the chamber's Green Business Program. The program offers an ASHRAE Level 2 audit, which identifies a comprehensive set of energy upgrades. After the no-cost audit is performed by one of the two program implementers, customers must sign an authorization form to proceed with installation, which program contractors perform at a later date (mostly in-house installers, though some are outsourced). According to the IOU Program Manager, the program is quite agile and can incorporate almost any measure on the deemed program list; in 2015, all deemed measures were made available through the program at no cost. Of note, both the implementer and the IOU articulated that there was a limit to how many light bulbs the program can install before triggering Title 24 regulations. As a result, the implementers told schools that they could receive up to 39 no-cost fixtures through the program. The program does not track the data required to calculate a project close rate. However, program implementation staff could provide conversion rate estimates.

The program does refer customers to SDG&E's Core program for measures not offered through this program and refers customers to the on-bill financing program for larger projects and to the demand response program for programmable thermostats. In the participant survey, approximately 30% of respondents reported that the implementer did refer them to other programs or rebates available for further energy savings opportunities.

Figure 14. SW-COM Direct Install Implementation Model



Participant Feedback on Program Value and Effectiveness

Based on the CPUC's Program Database from May 2015[20], the evaluation team identified 5,016 unique service account IDs and established a sample frame of 4,945 participants, defined by phone and contact name, after the removal of duplicate records or records without contact information.

We fielded the survey through the Opinion Dynamics phone bank and completed 72 interviews (37 customers who participated through Matrix Energy Services and 35 customers who participated through Synergy Companies). The response rate[21] was 13% and the data is representative of the population at the 90/10 confidence interval. These 72 respondents represented 1% of all sites defined by unique address and 2% of total energy savings (MMBTU). There were no statistically significant differences between participants served by Matrix Energy Services versus Synergy Companies.

Value

Table 38 presents the key program features designed to help participating businesses make energy efficiency improvements. The table also shows how many participants did not receive a given feature. Analyzing the number of participants who did not receive program features gives an indication of how much the target market needs the features to get energy efficiency upgrades.

The data show that the vast majority of participants used most program features. Only between 8% and 15% of participants reported not receiving one of the program features. There were two optional features in this program: help with finding a contractor and help reviewing contractor bids. Only 1 participant out of 72 (1%) received each feature.

Table 38. SW-COM Direct Install Program Features

Program Feature	Survey Wording	Did Not Receive Feature (n=72)
Audit/Identify Energy Savings	Help to identify the energy saving opportunities of your business	8%
Free Measures	Energy efficient products that were no-cost	10%
Direct Install	The program to install the energy efficient products instead of you hiring a contractor	11%
360 Project Assistance	Someone to assist with all aspects of the project from beginning to end	14%
Product Recommendations	Help to select the right energy efficient products to save energy	15%
Contractor Identification	Help with finding a contractor	99%
Contractor Bid Assistance	Help reviewing contractor bids	99%

Participants who recalled receiving a given program feature rated its importance on a scale from 0 to 10, where 10 means a feature was "critically needed" to execute the energy efficiency project and 0 indicated

[20] The evaluation team used the CPUC's Program Database from May 2015 to develop the survey sample. This database version included claims from January 2013 to December 2014, but was not the final database for the 2013-14 cycle. As a result, we identified 5,016 unique service account IDs when developing the sample, but 5,186 in the final program database when determining the total number of participants as shown the Program Design section.

[21] Given the large sample frame, the evaluation team took a simple random sampling approach and calculated the response rate using the American Association for Public Opinion Research (AAPOR) methodology.

that "it was not needed at all." Table 39 presents the distribution of participant scores and the average importance score for each program feature.

These findings confirm the four market barriers identified in the literature review. Two of the program's five core features achieved importance scores of 8 or above, indicating participants' strong need for free measures and direct installation. Free measures help overcome both the upfront cost and split incentive barriers, while the direct installation helps overcome search costs related to identifying energy efficiency products, services, and contractors. The bottom three program features received moderate scores of between 6.0 and 6.9 and provided technical assistance to help overcome participants' lack of knowledge to assess upgrade opportunities, indicating that this is still important to participants.

[The program] was energy saving and it was easy. They came in and took care of it. – Participant

It was free. That was the only reason we did it. – Participant

They did a great job. It was a great benefit to do what they did. They cut my energy costs. – Participant

Table 39. SW-COM Direct Install Importance Scores

Program Feature		Importance Score (a)				Mean Importance Score	Standard Deviation
		Don't Know or Refused	0–3	4–6	7–10		
Core	Free Measures (n=65)	2%	8%	14%	77%	8.3	2.4
	Direct Install (n=64)	5%	9%	14%	72%	8.0	2.5
	360 Project Assistance (n=62)	6%	16%	21%	56%	6.9	3.5
	Product Recommendations (n=61)	2%	25%	18%	56%	6.1	3.6
	Audit/Identify Energy Savings (n=66)	5%	23%	24%	48%	6.0	3.5
	Overall Mean Importance Score					**7.1**	

(a) Scale: 0–10, where 0 is "not needed at all" and 10 is "critically needed" to upgrade to more energy-efficient products. Mean importance scores do not include "Don't Know" or "Refused" responses.

There were two optional features measured in the survey: the importance of the program's help in finding a contractor and the importance of help in reviewing contractor bids. Only one participant provided scores for this service, as this was the only participant who said that an outside contractor installed the measures (as opposed to direct installation by Matrix or Synergy or installers provided through the program). This participant scored the importance of each item with a 7 and 6 for contractor identification and contractor bid assistance, respectively, and ranked the performance of both with a 9. This indicates that, for this particular participant, contractor services were important and very well performed.

Effectiveness

Table 40 presents the same key program features designed to help small businesses make energy efficiency improvements and shows how participants rated the implementer's performance of each feature on a scale from 0 to 10, where 10 represents excellent performance. Participants consistently gave high performance scores for all program features (8.4 or above), indicating that the implementer is highly effective at delivering the program services. Several participants expressed anecdotally that they appreciated the support that they received in terms of explaining how to use the systems installed and the additional information provided by the program to help them save energy.

Table 40. SW-COM Direct Install Performance Scores

Program Feature		Performance Score (a)				Mean Performance Score	Standard Deviation
		Don't Know or Refused	0–3	4–6	7–10		
Core	360 Project Assistance (n=60)	3%	3%	10%	84%	8.8	2.1
	Audit/Identify Energy Savings (n=65)	2%	5%	11%	83%	8.7	2.4
	Direct Install (n=62)	3%	5%	8%	84%	8.6	2.5
	Free Measures (n=65)	0%	6%	11%	83%	8.5	2.4
	Product Recommendations (n=61)	0%	7%	11%	82%	8.4	2.6
	Overall Mean Performance Score					**8.6**	

(a) Scale: 0–10, where 0 is "very poor" and 10 is "excellent." Mean performance scores do not include "Don't Know" or "Refused" responses.

Participants provided feedback as to what else the program could have provided that would have been helpful. Five participants wanted an assessment of their air conditioning units, one wanted the inclusion of LEDs, another of solar, and two mentioned exterior lighting. Six participants wanted better-quality products and better service, including a contact person to help with the project. One participant mentioned that there was a limit on how many fixtures could be retrofitted (likely due to Title 24 limitations), and thus the participant was unable to complete lighting replacements for the entire store.

Consistent with high performance scores, most participants (93%) said that they would recommend the program. Of those, the majority cited the monetary or energy savings that they received through the program as the reason that they would recommend the program. More than a third of participants specified energy or energy bill savings as the reason, and about 20% specified that it was because the program was free.

[I would recommend the program] because of the free energy upgrades. It doesn't hurt to save energy. – Participant

It was almost too good to be true. – Participant

[I would recommend the program] because ultimately it did save us money, despite the challenges. There was a gap in responsiveness … customer service needs work. – Participant

It was about a $200 savings on our electric bill. – Participant

We did need cost-efficient lighting. I just wish they had finished what they started. – Participant

Only a few participants (6%) said that they would not recommend the program. The reasons for not wanting to recommend the program were poor-quality products, installations that were half-complete, and receiving something different than expected out of the program.

[I would not recommend the program] because it was not what we expected from it. – Participant

[I would not recommend the program] because it's almost a hair away from being scammed. Quality was poor, products were cheap. They didn't come back to complete the rest of the project. – Participant

Challenges

Although satisfaction among participants was high and most would recommend the program, a few participants (6) raised challenges. These challenges were quite consistent with the reasons articulated above for not recommending the program. However, all the participants who did raise challenges did say that they would recommend the program. The most commonly mentioned challenge was related to implementers who did not finish work they started or who delivered but did not install program measures (most commonly, thermostats). This issue occurred with both implementers.

> *When they came they brought thermostats. They didn't install them. They just left them there. We had to call back to get someone to install them. – Participant*

> *[One challenge] was just getting the thermostat to operate, to program it. We had one revisit and a couple of calls [to get it to work]. – Participant*

2.2.8 RightLights

Summary of Findings

Below are key take-aways from case study findings related to PG&E's PY2013-14 RightLights Program.

Program Characteristics & 2013-14 Performance Statistics

- This program targets small and medium businesses with annual peak demand below 200 kW
- The literature review findings in the case study aligned with the market barriers that this program is attempting to address.
- The program achieved ex ante energy savings of 16,797MWh and 2.4MW. The combined savings (MMBTU) represent 4% of all active 2013-14 3P Commercial programs. The program's energy savings fell slightly short of PG&E's forecasts (87% of forecast).
- The program reached 838 participants with an average spending of $11,366 per participant.
- The program's conversion rate from audits to completed projects was moderate at 54%.

Participant Feedback on Value and Effectiveness

The table below presents key take-aways from exploring the value of program design features to help small and medium businesses upgrade to more energy efficient products. It also summarizes the implementer's effectiveness in delivering those services from the participant perspective.

Survey Topics	Participant Feedback		Program Implications
Core Technical Assistance Features (a)	Data indicate these are highly needed, except Audit is moderately needed	Data indicate the implementer is highly effective at delivering these features	No action needed as the target market has a diverse need for audits
Direct Install Feature	Data indicate this is highly needed	Data indicate the implementer is highly effective at delivering direct install services	No action needed
Financial Assistance (Co-Pay)	Data indicate this is highly needed	Data indicate the rebate level is highly effective	No action needed
Performance and Value Alignment	Value and performance aligned well		No action needed
Participant Need for Other Program Features	▪ 85% describe current design as sufficient ▪ Small % wanted additional lighting products		Consider additional measures if align with State's 3P program goals
Likelihood to Recommend Program	99% would recommend the program		Address work quality issues through inspection process
Challenges During Participation	Few (8%) experienced product quality or installation issues		

(a) Audit/Identify Energy Savings, Product Recommendations, 360 Project Assistance. Optional features to help participants identify contractors and review their bids are not included in this summary because only three respondents used this feature.

Program Design

According to program implementation staff and program documents, PG&E's RightLights program is designed to generate electric savings from small and medium businesses in Santa Clara, Santa Cruz, Monterey, and San Mateo counties with an electric annual peak demand less than 200kW. These customers typically lack the resources (monetary, personnel, or energy efficiency knowledge) to install energy efficiency upgrades on their own. RightLights helps overcome these barriers by offering a facility-wide audit; upgrade recommendations; and the direct installation of low- or no-cost measures that include interior and exterior lighting, vending machine controls, and refrigeration.

PG&E's Core programs offer these measures as well. However, through RightLights, customers do not have to identify energy-saving measures, find qualified installers, and pay for the services out-of-pocket before receiving the rebate. Furthermore, the program implementer, Ecology Action, uses the Modified Lighting Calculator to identify the most suitable lighting technologies, a service that is not available with deemed measures through Core programs. According to program implementation staff, the premise of the program is to "plant the seed" among current customers for potential future energy upgrades.

A literature review on the topic of energy efficiency in small and medium businesses confirmed the hard-to-reach nature of this customer segment. The literature review identified the following barriers for small and medium businesses to implementing energy efficiency upgrades.

- **Upfront costs to invest in energy efficiency.** Many reports considered upfront costs as one of the main barriers for small and medium businesses to install energy efficient products (Itron, Inc. 2014; KEMA, Inc. 2008; Quantum Consulting Inc. 1999; The Cadmus Group, Inc. 2013; Turiel 2009; XENERGY Inc. 1999).

- **Lack of knowledge to assess upgrade opportunities.** Several reports indicated that customers in the small and medium business segment lack the expertise and knowledge to "comprehensively and confidently" (XENERGY Inc. 1999) assess the future benefits of energy efficiency products, services, and practices (KEMA, Inc. 2008; Quantum Consulting Inc. 1999; The Cadmus Group, Inc. 2013; XENERGY Inc. 1999). Some reports also indicated that small business customers' immediate priorities do not include managing energy costs (The Cadmus Group, Inc. 2013; Turiel 2009; XENERGY Inc. 1999).

- **Search costs related to identifying energy efficiency products, services, and contractors.** Two reports discussed the costs related to acquiring information about energy efficiency products or services, including the amount of time it takes to identify, locate, and learn about these. (KEMA, Inc. 2008; Quantum Consulting Inc. 1999). Other reports cited that getting energy efficiency information and picking a contractor presents an inconvenience to small and medium businesses (KEMA, Inc. 2008; Quantum Consulting Inc. 1999; XENERGY Inc. 1999).

- **Split Incentives.** Three reports cited split incentives as a significant barrier to perform energy efficiency upgrades, because many small and medium businesses rent their facilities and are thus not responsible for building improvements. At the same time, building owners may lack the incentive to pursue such investments if only their tenant reaps the benefits of a lower electric bill (Boice Dunham Group 2005; Quantum Consulting Inc. 1999; Turiel 2009; XENERGY Inc. 1999).

RightLights completed projects with 838 customers throughout 2013–14, and reached 87% of its kWh savings goal based on ex ante savings data in the CPUC's Program Database.

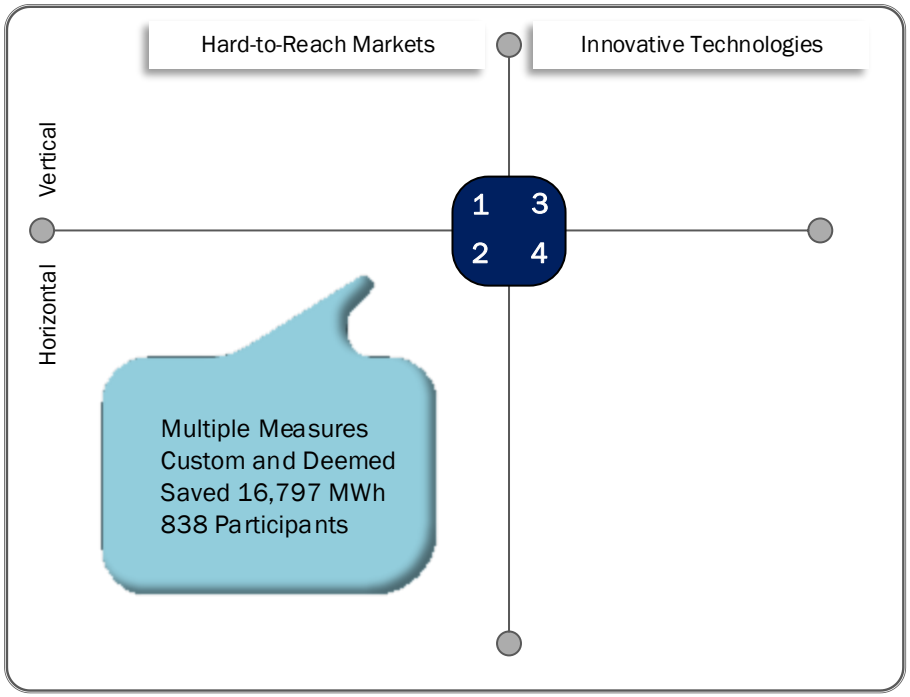
Table 41. RightLights Energy Efficiency Performance Statistics

	Spending	kWh	kW	Therm
Goal (a)	$9,498,276	19,341,924	2,580	−117,464
Actual	$9,524,667(b)	16,797,299 (b)	2,399 (b)	−44,473 (b)
% Goal Achieved	100%	87%	91%	38%
Actual per Participant (n=838)	$11,366	20,045	3	N/A

(a) IOU Monthly Energy Efficiency Programs Report from December 2014; (b) CPUC's Program Database, version from 11-02-2015. The number of participants is based on unique service account IDs.

Figure 15 summarizes some of the program characteristics. The program targets hard-to-reach customer across sectors and is subsequently placed in Quadrant 2.

Figure 15. RightLights Program Characteristics



Implementation

The program implementer (Ecology Action) delivers the program from marketing and outreach to incentive payment. In particular, the implementer conducts the following activities:

- Marketing and outreach
- Engineering assessment/evaluation
- Overseeing measure installation
- Reporting on project progress back to PG&E

- Verification/QA: Once a contractor informs Ecology Action that a project has been completed, the implementer visits each site to perform a QA check to verify that measures were installed to specification and if customers are satisfied; PG&E's central inspection team supports the implementer's verification efforts

- Incentives: The implementer pays the program or non-program contractor once verification is complete, the contractors bill each customer for the difference between the project cost and the incentive check, and the implementer collects a copy of the bill, as part of the QA process

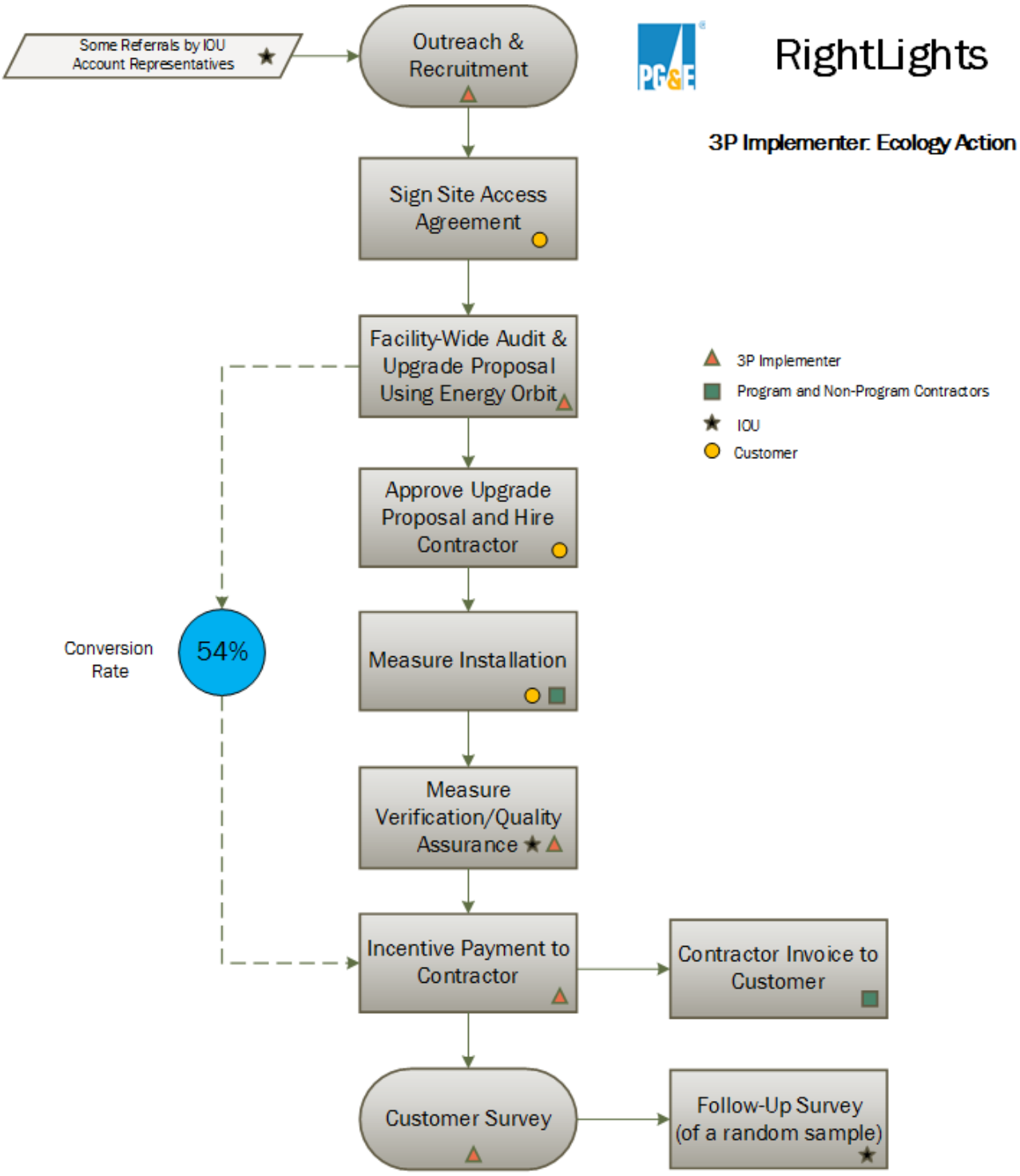
The implementation model in Figure 16 outlines the key implementation activities involved from the first step of finding customers to the final step of completing an energy efficiency project. Based on the program-tracking data, the conversion rate from project audit to completion was 54% for the 2013–14 cycle.

Although PG&E account representatives provide some referrals to prospective program participants, the program implementer conducts most outreach and recruitment. The majority of projects come from the implementers' grassroots outreach, such as canvassing and direct phone calls, because many small and medium businesses commonly do not open their mail or emails. Generally, multilingual staff conduct these outreach efforts, which the implementer considers as key to communicating with many customers in the target market. In addition, outreach efforts include mailers, digital marketing, and LGP marketing. RightLights leverages LGPs to help shape the program's overall marketing strategy.

> *We find that in the small/medium business world, most people don't open their mail. Most people don't open spam type email. You really have to walk into the store and tell them what your services are and tell them how easy they are to participate in before they will actually consider working with you. – Program Implementation Staff*

The implementer refers program participants to on-bill financing if the recommended upgrades exceed $5,000. The implementer also refers customers with an electric annual peak demand above 200kW to other PG&E programs, because RightLights serves only customers with a lower electric demand. Although the program does not have a formal process for cross-referrals to other PG&E programs, one-quarter of the participants reported that the program implementer helped them identify other programs or rebates for additional energy savings. Additionally, program implementation staff noted that PG&E is working on a 2016 RFP to develop a referral process across programs.

Figure 16. RightLights Implementation Model



Participant Feedback on Program Value and Effectiveness

Based on the CPUC's Program Database,[22] the evaluation team identified 838 unique service account IDs and established a sample frame of 745 participants, defined by phone and contact name, after the removal of duplicate records or records without contact information.

We fielded the survey through the Opinion Dynamics phone bank and completed 64 interviews for a response rate[23] of 14%. Results are representative of the population at the 90/10 confidence interval. These 64 respondents represented 9% of all sites defined by unique address and 9% of total energy savings (MMBTU).

Value

Table 42 presents the key program features designed to help small and medium businesses make energy efficiency improvements. The table also shows how many participants did not receive a given feature. Analyzing the number of participants who did not receive program features gives an indication of how much the target market needs the features to get energy efficiency upgrades.

The data show that the vast majority of participants used most program features with some exceptions (Direct Installation, Contractor Identification, and Contractor Bid Assistance). Given that one-third of participants did not opt for direct installation from the program indicates a diverse need for installation support among small and medium businesses and suggests that the program's strategy to offer optional direct installation is appropriate. In contrast, a small proportion of participants (5%) used the program's help in finding a contractor or reviewing contractor bids, which suggests a small market need for these features.

Table 42. RightLights Program Features

Program Feature	Survey Wording	Did Not Receive Feature (n=64)
360 Project Assistance	Someone to assist with all aspects of the project from beginning to end	8%
Discount/Co-Pay	The rebate or discount to help offset the project costs	11%
Audit/Identify Energy Savings	Help to identify the energy saving opportunities of your business	13%
Product Recommendations	Help to select the right equipment to save energy	16%
Direct Installation	The program to install the energy efficient equipment instead of hiring your own contractor	30%
Contractor Identification	Help with finding a contractor	95%
Contractor Bid Assistance	Help reviewing contractor bids	95%

Participants who recalled receiving a given program feature rated its importance on a scale from 0 to 10, where 10 means a feature was "critically needed" to execute the energy efficiency project and 0 indicated that "it was not needed at all." Table 43 presents the distribution of participant scores and the average importance score for each program feature.

[22] The evaluation team used the CPUC's Program Database from May 2015 to develop the survey sample. This database version included claims from January 2013 to December 2014, but was not the final database for the 2013-14 cycle. Nevertheless, the number of unique service account IDs is consistent between the two database versions.

[23] Given the large sample frame, the evaluation team took a simple random sampling approach and calculated the response rate using the AAPOR methodology.

Overall, participants highly valued the program's core features, with importance scores between 6.9 and 8.3. These findings confirm that small and medium businesses need these features to overcome the lack of financial resources, personnel, and knowledge, as suggested by program implementation staff and secondary literature. However, the program's optional features to identify contractors and review their bids received low mean importance scores, indicating that participants do not need help in this area. Digging deeper into the mean importance score for contractor identification shows a large standard deviation, and we can see polarized scores among the three participants rating this feature. This indicates that, while most customers do not need help finding a contractor, there may still be a few customers who do need it and, therefore, the program should continue offering this feature.

Table 43. RightLights Importance Scores

	Program Feature	Importance Score (a)				Mean Importance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	Discount/Co-pay (n=57)	5%	9%	11%	75%	8.3	3.0
	Direct Installation (n=45)	7%	4%	29%	60%	7.8	2.4
	360 Project Assistance (n=59)	2%	12%	14%	73%	7.5	3.2
	Product Recommendations (n=54)	4%	15%	15%	67%	7.3	3.4
	Audit/Identify Energy Savings (n=56)	4%	13%	21%	63%	6.9	3.1
	Overall Mean Importance Score					**7.5**	
Optional	Contractor Identification (n=3)	0%	67%	0%	33%	3.3	5.8
	Contractor Bid Assistance (n=3)	0%	100%	0%	0%	1.0	1.7

(a) Scale: 0–10, where 0 is "not needed at all" and 10 is "critically needed" to upgrade to more energy-efficient products. Mean importance scores do not include "Don't Know" responses.

Effectiveness

Table 44 presents the same program features designed to help small and medium businesses make energy efficiency improvements. The table shows how participants rated the implementer's performance of each feature on a scale from 0 to 10, where 10 represents excellent performance. Participants consistently gave high performance scores for all program features, indicating that the implementer provides high-quality services.

Table 44. RightLights Performance Scores

Program Feature		Performance Score (a)				Mean Performance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	Product Recommendations (n=54)	2%	2%	0%	96%	9.1	1.6
	Discount/Co-pay (n=57)	0%	4%	2%	95%	8.9	2.1
	360 Project Assistance (n=59)	2%	2%	5%	92%	8.8	1.8
	Direct Installation (n=45)	0%	0%	11%	89%	8.8	1.7
	Audit/Identify Energy Savings (n=56)	0%	4%	4%	93%	8.7	2.1
	Overall Mean Performance Score					**8.9**	
Optional	Contractor Identification (n=3)	0%	0%	0%	100%	8.3	1.5
	Contractor Bid Assistance (n=3)	0%	0%	0%	100%	8.3	1.5

(a) Scale: 0–10, where 0 is "very poor" and 10 is "excellent." Mean performance scores do not include "Don't Know" responses.

When asked if any additional program features are needed, the majority of participants (85%) said that the current program design was sufficient. Those who offered suggestions recommended providing additional measures (three participants mentioned LEDs, other lighting products, and air compressors), showcasing product samples, giving more detailed estimates of expected savings, or serving other areas in the building (each mentioned by one participant).

Consistent with high performance scores, almost all participants (99%) said that they would recommend the program to other businesses. More than half attributed this to energy or bill savings.

It was helpful and saved cost upfront and long-term cost down road. – Participant

It cut my energy bill in almost half. – Participant

The rebates largely covered the cost to the upgrade. – Participant

Table 45 summarizes the reasons why participants would recommend the program. The one participant who would not recommend the program explained that the businesses' electric bill had increased since the upgrade.

Table 45. Participants' Reasons to Recommend RightLights to Other Businesses

Reasons	Percent (n=63)
Energy savings/bill savings	56%
No upfront costs	16%
Better/new lighting	13%
Program was free for us	11%
Easy/smooth participation	11%
Good services	11%
Rebate was good	6%
Helpful information	6%
It's the right thing to do (environment/social)	6%
Other	7%
Don't know	3%

Note: Multiple responses.

A few participants (14%) experienced some challenges during project implementation. Three participants mentioned that the lighting products did not work at first, so the implementer had to return for repairs. Two participants highlighted scheduling issues, and two others were dissatisfied with the installation contractor. Lastly, one participant mentioned that the product recommendations were not feasible, and another explained that the implementer's savings estimates were incorrect. While none of these issues deterred participants from recommending the program to other businesses, the program should start to address work quality issues through its inspection process.

2.2.9 Boiler Energy Efficiency Program

Summary of Findings

Below are key take-aways from case study findings related to PG&E's PY2013-14 Boiler Energy Efficiency Program.

Program Characteristics & 2013-14 Performance Statistics

- This program targets customers with commercial hot water and steam boiler systems.
- The literature review did not identify any studies on energy efficient boiler upgrades in the commercial market.
- The program achieved ex ante energy savings of 164 MWh, 43kW and 1.4M Therm. The combined savings (MMBTU) represent 12% of all active 2013-14 3P Commercial programs. The program's energy savings exceeded PG&E's electric and gas forecasts.
- The program reached 61 participants with an average spending of $70,125 per participant.
- The program's conversion rate from audits to completed projects was strong at 71%.

Participant Feedback on Value and Effectiveness

The table below presents key take-aways from exploring the value of program design features to help commercial customers improve their boiler system. It also summarizes the implementer's effectiveness in delivering those services from the participant perspective.

Survey Topics	Participant Feedback		Program Implications
Core Technical Assistance Features (a)	Data indicate these are moderately needed	Data indicate the implementer is highly effective at delivering these features	Diverse need in the target market imply a need for better targeting; rebate level should be reconsidered
Financial Assistance (Rebate)	Data indicate this is moderately needed	Data indicate the rebate level is highly effective	
Contractor Assistance Features (b)	Data indicate contractor identification is moderately needed, but low need for bid review	Data indicate the implementer is moderately effective at delivering these features	Issues with contractors suggest program may need to be more selective in who it recommends
Performance and Value Alignment	Value and performance aligned well, except Product Recommendations over-performed in relation to market need		Consider whether the program needs to improve and remove product recommendations from design
Participant Need for Other Program Features	▪ 78% describe current design as sufficient ▪ Two suggested pre and post energy use benchmarking		Explore benchmarking service if feasible and cost effective
Likelihood to Recommend Program	All would recommend the program		Issues with contractors indicate the program may need to be more selective in who it recommends
Challenges During Participation	Long project implementation time due to installation issues; some contractor communication issues		

(a) Audit/Identify Energy Savings, Product Recommendation, ROI Analysis, 360 Project Assistance; (b) Contractor Identification, Contractor Bid Review

Program Design

PG&E's Boiler Energy Efficiency Program originated in 2006 and is designed to capture gas and limited electric savings from commercial hot water and steam boiler systems. According to program implementation staff and program materials, businesses lack the technical understanding to identify and assess boiler upgrade opportunities and generally replace boiler equipment only when it fails. In addition, relatively few programs and organizations target boiler energy efficiency because the boiler industry has primarily focused on safety and maintenance.

To help overcome these barriers to boiler system upgrades, the Boiler Energy Efficiency Program offers boiler inspections, technical assistance, and rebates to reveal and implement boiler energy savings opportunities. As such, the program helps customers identify upgrade options, estimate costs and energy savings, and assess vendor proposals. According to the implementer (Enovity), the program provides a neutral "voice of reality" perspective that tends to be more conservative than that of vendors.

> *We bring some good upfront service in really working closely with the customer and helping them from where they are. It may be that they have no clue what they could do. There are a lot of things that people don't initially think of, but our guys have a lot of experience at. Helping them discover opportunities that they might not have seen. Then working with them from the things they have found to ensure that is it really going to [work]. We help them to understand before they get into something whether or not this works for them and what the benefits are. – Program Implementation Staff*

There are no known studies addressing barriers to energy efficiency boiler upgrades in the commercial market. A comprehensive online search identified some literature about the saturation or the energy impacts of boiler

technology.[24] However, these sources do not address the market barriers related to implementing the upgrades. Only one report (Roy 2015) discussed the barriers that residential households face in making energy efficiency upgrades to their boilers. Although a comparison between residential and commercial customers should be viewed with caution, this report highlighted some barriers found in literature reviews for other 3P programs. These barriers include the customer's tendency to minimize upfront cost, the customers' lack of knowledge or time to learn about boiler upgrades, and split incentives if the customer rents the facility from someone else.

Program participants mentioned some of the above reasons when asked about barriers to performing boiler system upgrades. For example, half of the 18 surveyed participants highlighted financial reasons, as shown in Table 46.

Table 46. Participants' Barriers to Make Boiler System Upgrades

Participants' Barriers to Boiler System Upgrades	Total Respondents (n=18)
Financial (lack of funding/ROI)	9
Finding a contractor/getting a quote	3
Lack of knowledge	1
Internal policies	1
No barriers	3

The program completed projects with 61 customers throughout 2013–14, and reached 111% of its gas savings goal and 278% of its electric savings goal (ex ante) based on savings the CPUC's Program Database.

Table 47. Boiler Energy Efficiency Program Performance Statistics

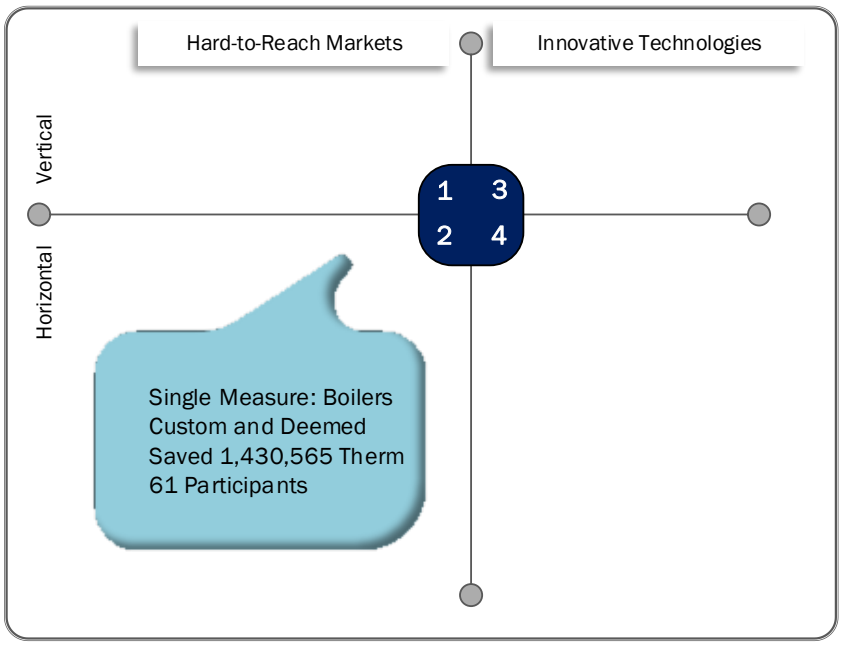
	Spending	kWh	kW	Therm
Goal (a)	$3,439,847	59,202	16	1,284,337
Actual	$4,277,625(b)	164,437 (a)	43 (a)	1,430,565 (a)
% Goal Achieved	124%	278%	265%	111%
Actual per Participant (n=61)	$70,125	2,696	0.7	23,452

(a) IOU Monthly Energy Efficiency Programs Report from December 2014.; (b) CPUC's Program Database, from 11-02-2015. The number of participants is based on unique service account IDs.

Figure 17 summarizes some of the program characteristics. The program targets hard-to-reach customers with boilers across different vertical sectors and is therefore placed in Quadrant 2.

[24] These include Itron's Commercial Saturation Survey, Itron's California Commercial End-Use Survey (2006), and KEMA's Multifamily Boiler Controls – Process Evaluation of SoCalGas' and SDG&E's 2006–2008 Multifamily Energy Efficiency Rebate Program.

Figure 17. Boiler Energy Efficiency Program Characteristics



Implementation

The program implementer conducts the following activities to deliver the Boiler Energy Efficiency Program:

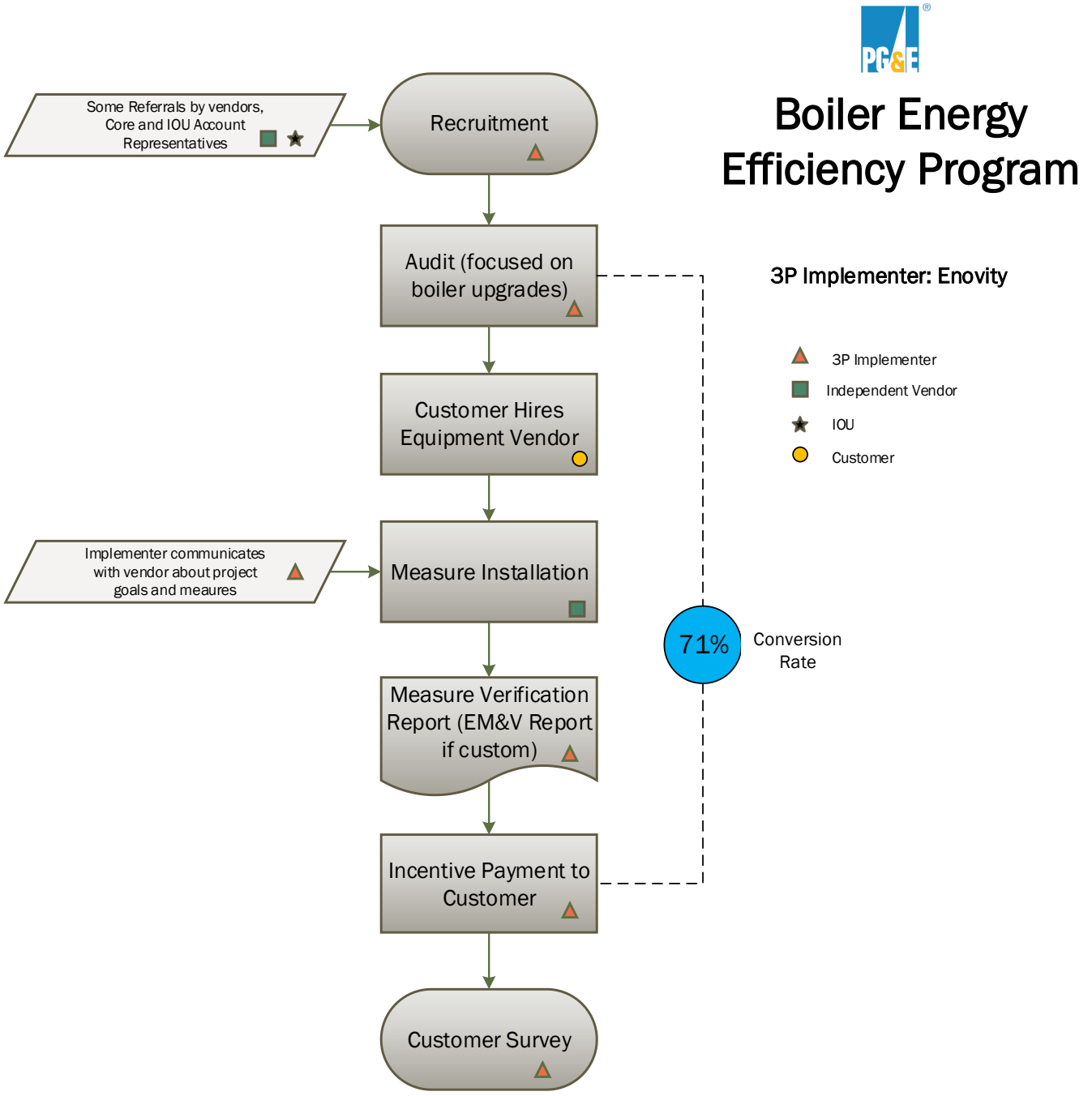
- Marketing and outreach
- Engineering assessment/evaluation
- Vendor liaison during the measure installation
- Verification/QA: EM&V Report for Custom; Rebate Verification Report for Deemed – 100% of projects approved by PG&E
- Customer feedback in satisfaction survey (the final incentive payment is contingent on signing and completing that survey)

Figure 18 outlines the key implementation activities involved from the first step of finding customers to the final step of completing an energy efficiency project. The implementer conducts marketing and recruitment via direct mail, email, and telemarketing in this matured program. Enovity also leverages PG&E's account representatives who provide customer lists with project leads to the implementer or sometimes refer the customer to Enovity directly. Some referrals also come from boiler vendors who inform customers about rebates that are available for their equipment. Early in the program, the implementer attended industry events to identify and recruit prospective participants. According to the program-tracking data, the conversion rate from project audits to completed projects was 71% for 2013–14.

Program implementation staff refer participants to other PG&E energy efficiency programs or PG&E's account representatives on occasion if the participant expresses interest in further energy efficiency upgrades. Yet

close to three-quarters (72%) of participants reported that the program implementer helped them identify other programs or rebates for additional energy savings. Currently, the program does not coordinate with LGPs.

Figure 18. Boiler Energy Efficiency Program Implementation Model



Participant Feedback on Program Value and Effectiveness

Based on the CPUC's Program Database,[25] the evaluation team identified 53 unique service account IDs and established a sample frame of 48 participants, defined by phone and contact name, after the removal of duplicate records or records without contact information.

Trained staff of the Opinion Dynamics phone bank and analytical staff called the entire sample and completed 18 interviews for a completion rate of 38%. These 18 respondents represented 30% of all sites defined by unique address and 48% of total energy savings (MMBTU).

Value

Table 48 presents the key program features designed to help commercial customers make boiler energy efficiency improvements. The table also shows how many participants did not receive a given feature, which gives an indication of how many customers in the target market did not need the feature to complete the energy efficiency project through the program.

The data reveal that all participants received the audit to identify energy savings opportunities from boiler upgrades and most participants received the technical assistance features. However, the mixed uptake of some of the optional program features indicates that not all customers need the program's assistance in reviewing contractor bids and finding a contractor.

Table 48. Boiler Energy Efficiency Program Features

Program Feature	Survey Wording	Did Not Receive Feature (n=18)
Audit/Identify Energy Savings	Help to identify the energy saving opportunities for your boiler system	0
Product Recommendations	Help to select the right boiler system upgrades	4
360 Project Assistance	Someone to assist with all aspects of the project from beginning to end	4
ROI Analysis	Help to calculate the costs and payback of the boiler system improvements	4
Rebate	Financial assistance to help offset the project costs	4
Contractor Bid Assistance	Help reviewing contractor bids	9
Contractor Identification	Help with finding a contractor	10

Participants who recalled receiving a given program feature rated its importance on a scale from 0 to 10, where 10 means a feature was "critically needed" to improve boiler systems and 0 indicated that "it was not needed at all." Table 49 presents the distribution of participant scores and the average importance score for each program feature.

Overall, these participants gave moderate mean importance scores for the program's core features, with scores ranging from 4.4 to 6.7. Almost two-thirds scored the rebate with 7 or higher, which suggests that financial assistance is critical for many participants to offset project costs. Other survey findings support this.

[25] The evaluation team used the CPUC's Program Database from May 2015 to develop the survey sample. This database version included claims from January 2013 to December 2014, but was not the final database for the 2013-14 cycle. As a result, we identified 53 unique service account IDs when developing the sample, but 61 in the final program database when determining the total number of participants as shown the Program Design section.

For example, half of all surveyed participants highlighted financial barriers to improving their boiler system, and one-third said that they would recommend the program to others because of the rebate.

Although other technical assistance features received slightly lower mean importance scores, more than half of the participants highly valued most features, with scores of 7 or higher. This finding supports the implementer's claim that that many customers lack the knowledge to reveal and assess energy savings from their boiler systems. Nevertheless, the data reveal that some participants do possess the technical knowledge and resources to manage the project implementation.

The program's optional features to identify contractors and review their bids received the lowest importance scores. Among the eight participants who received help finding a contractor, three rated the feature as highly important whereas four gave scores below 3 (one respondent gave the feature a 6). On the other hand, seven of nine participants who received contractor bid assistance indicated that they did not need this feature to complete boiler system upgrades (scores of 3 and below). These findings indicate that a few customers need support working with contractors or equipment vendors and, therefore, the program should continue to offer these optional services.

Table 49. Boiler Energy Efficiency Program Importance Scores

Program Feature		Importance Score (a)				Mean Importance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	Rebate (n=14)	0	2	3	9	6.7	2.6
	ROI Analysis (n=14)	0	1	5	8	6.6	2.7
	Audit/Identify Energy Savings (n=18)	0	2	6	10	6.4	2.2
	360 Project Assistance (n=14)	0	2	5	7	6.1	2.7
	Product Recommendations (n=14)	0	4	7	3	4.4	3.0
	Overall Mean Importance Score					**6.0**	
Optional	Contractor Identification (n=8)	0	4	1	3	4.3	4.2
	Contractor Bid Assistance (n=9)	0	7	1	1	2.4	2.6

(a) Scale: 0–10, where 0 is "not needed at all" and 10 is "critically needed" to improve your boiler system. Mean importance scores do not include "Don't Know" responses.

Effectiveness

Table 50 presents the same program features designed to help businesses make energy-efficient boiler improvements. The table shows how participants rated the implementer's performance of each feature on a scale from 0 to 10, where 10 represents excellent performance. Participants consistently gave high performance scores for all core features, indicating that the implementer provides high-quality services. However, the implementer's performance of optional program features scored slightly lower.

Table 50. Boiler Energy Efficiency Program Performance Scores

Program Feature		Performance Score (a)				Mean Performance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
	360 Project Assistance (n=14)	0	0	0	14	8.7	1.1
	ROI Analysis (n=14)	0	1	0	13	8.4	2.5
	Audit/Identify Energy Savings (n=18)	0	0	3	15	8.3	1.6
	Rebate (n=14)	0	1	0	13	8.1	2.6
	Product Recommendations (n=14)	0	1	1	12	7.8	2.7
	Overall Mean Performance Score					**8.3**	
Optional	Contractor Bid Assistance (n=9)	0	2	1	6	6.4	3.9
Optional	Contractor Identification (n=8)	0	3	0	5	5.6	4.2

(a) Scale: 0–10, where 0 is "very poor" and 10 is "excellent." Mean importance scores do not include "Don't Know" responses.

When asked if any additional program features are needed, more than three-quarters of participants (14 of 18) said that the current program design was sufficient. Among the four participants who suggested additional services, two recommended that the program provide a baseline energy usage to help benchmark project savings and two other participants suggested that the program recommend boiler vendors to the customer because finding a contractor was difficult.[26]

Consistent with high performance scores, all participants said that they would recommend the program to other businesses.

[26] Based on the existing data, we cannot determine if this feature was not offered or if the participants did not recall this service.

Table 51 summarizes the diverse reasons why participants would recommend the Boiler Energy Efficiency Program. Some participants who would recommend the program due to the rebate and its technical support noted the following:

The financial incentive … can help make the ROI good enough. – Participant

[I would recommend the program] because of the benefits you get financially to justify the project … without the financial assistance we wouldn't have had a project. – Participant

It took an important part of the research and studying energy savings away from us so that service was very valuable. It made it easier. – Participant

Table 51. Participants' Reasons to Recommend the Program to Other Companies (multiple response)

Reasons to Recommend the Program	Number of Respondents (n=18)
Rebate for equipment upgrades	6
Technical support/information about boilers	5
Energy/bill savings	4
Easy participation	3
Ease of paperwork	2
General assistance	2
Environment	1

Even though satisfaction with the program was high, some participants (5) experienced some challenges during project implementation. Three mentioned that the project implementation time frame was difficult to meet due to installation problems. Another participant highlighted more general communication problems during the measure installation. Lastly, one participant experienced problems with the contractor. This participant mentioned that it was difficult to find a contractor in the first place, and that the upgrade became costly because the contractor had to make several changes during the installation. However, these challenges did not deter the participants from recommending the program to other companies.

2.2.10 LED Accelerator

Summary of Findings

Below are key take-aways from case study findings related to PG&E's PY2013-14 LED Accelerator Program.

Program Characteristics & 2013-14 Performance Statistics

- This program targets large, multi-site commercial customers with large lighting load (focus on retail chain stores and grocery stores whether there is a lot of lighting used to illuminate products for sale).
- The literature review findings in the case study aligned with the market barriers that this program is attempting to address.
- The program achieved ex ante energy savings of 11,716 MWh and 2.5MW. The combined savings (MMBTU) represent 3% of all active 2013-14 3P Commercial programs. The program's energy savings exceeded PG&E's forecasts.
- The program reached 236 participants with an average spending of $22,418 per participant.
- The program's conversion rate from audits to completed projects was strong at 72%.

Participant Feedback on Value and Effectiveness

Survey Topics	Participant Feedback		Program Implications
Core Technical Assistance Features (a)	Data indicate these are highly needed	Data indicate the implementer is highly effective at delivering these features	No action needed
Contractor Identification Features	Data indicate low need for this features	Data indicate the implementer is moderately effective at delivering this features	No action needed given that this is optional based on need
Financial Assistance (Rebate)	Data indicate this is moderately needed	Data indicate the rebate level is highly effective	Reconsider rebate level given a polarized need in target market
Performance and Value Alignment	Performance and Value aligned, except some features marginally under-performed slightly in relation to market need		Consider more guidance and assistance during the screening process; consider more customer education on theory behind the custom review processes
Challenges During Participation	Lengthy project implementation Difficulties developing the scope of work		
Participant Need for Other Program Features	All describe current design as sufficient		No action needed
Likelihood to Recommend Program	All would recommend the program		No action needed

(a) Audit/Identify Energy Savings, Product Recommendation, Economic Analysis, Sector Expertise, 360 Project Assistance

Program Design

PG&E's LED Accelerator (LEDA) program originated in 2009 and is designed to transform the market's acceptance of LED technology as a high-quality lighting option. The program targets large, multisite commercial customers. Although LEDA focuses on customers in the retail and grocery sector who have many lights on 24/7, it also works with banks and medical offices. According to the program implementer, Energy Solutions, the program fills a need for customers who have a very large lighting load and unique lighting needs because illuminating products is a crucial part of their business.

To encourage the adoption of new and higher-efficiency LEDs, the program offers no-cost site inspections and an economic analysis of lighting upgrades to assess energy savings potential. The program also provides technical assistance to help customers select the appropriate project scope, calculate the ROI, and assist with all aspects of the project from beginning to end. LEDA offers rebates for interior and exterior LED lighting fixtures or bulbs. PG&E's Core programs also offer rebates for LEDs; however, the LEDA program offers higher incentives and offers select higher-tier products that are not available through Core.

In addition to end-users, the program implementer works with manufacturers to understand and differentiate the LED products for the customer (color rendering index and type of light needs vary by customer). From the implementer's perspective, close collaboration with manufacturers is critical to stay on top of frequent technology changes.

A literature review on the topic of LED lighting in commercial facilities found the following barriers to adopting LEDs.

- **High Costs.** Several reports (DNV KEMA 2013; KEMA, Inc. 2014; TRC Energy Services 2014; Northeast Energy Efficiency Partnerships 2015; New York State Energy Research and Development Authority 2014) described product costs as a major barrier to higher adoption of LED lighting despite decreasing costs for LEDs on the market.

- **Performance or Quality Concerns.** Three reports (DNV KEMA 2013; KEMA, Inc. 2014; TRC Energy Services 2014; Pacific Northwest National Laboratory 2014) cited concerns about the quality of LED lighting as a barrier to install LEDs. Quality concerns included issues related to dimming LED lights, color shifts of LEDs, the flickering of bulbs, and uncertainty about the lifetime of an LED bulb. One of the reports (Pacific Northwest National Laboratory 2014) also noted that "… the rapid evolution of products within the LED industry has challenged manufacturers to develop full product lines" and pointed to product serviceability and interchangeability issues for LEDs. This report further notes that manufacturers "… are either not aware or not significantly incentivized in terms of profit margin to understand that specifiers need a range of products within a given family to meet commercial design needs and standards" (Pacific Northwest National Laboratory 2014).

- **Lack of Awareness.** In one study, distributors of LED lights mentioned that a barrier to LED adoption is general lack of familiarity/awareness of LEDs (KEMA, Inc. 2014; TRC Energy Services 2014).

The program completed projects with 236 customers throughout 2013–14, and reached 226% of its electric savings goal based on the CPUC's Program Database.

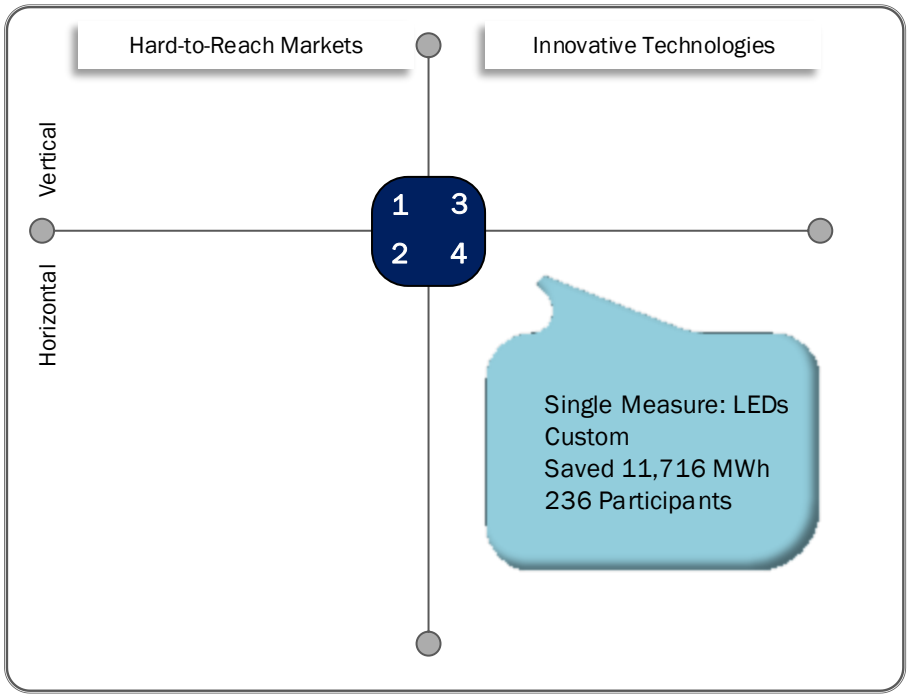
Table 52. LED Accelerator Performance Statistics

	Spending	kWh	kW	Therm
Goal (a)	$2,183,901	5,184,000	1,120	−125,581
Actual (b)	$5,290,646 (b)	11,715,535 (b)	2,534 (b)	−6,588 (b)
% Goal Achieved	242%	226%	226%	N/A
Actual per Participant (n=236)	$22,418	49,642	11	N/A

(a) IOU Monthly Energy Efficiency Programs Report from December 2014;(b) CPUC's Program Database, version from 11-02-2015. The number of participants is based on unique service account IDs.

Figure 19 summarizes some of the program characteristics. The program targets multisite commercial customers across different sectors to transform the market's acceptance of LED technology and is therefore placed in Quadrant 4.

Figure 19. LED Accelerator Characteristics



Implementation

The program implementer conducts the following activities to deliver the program:

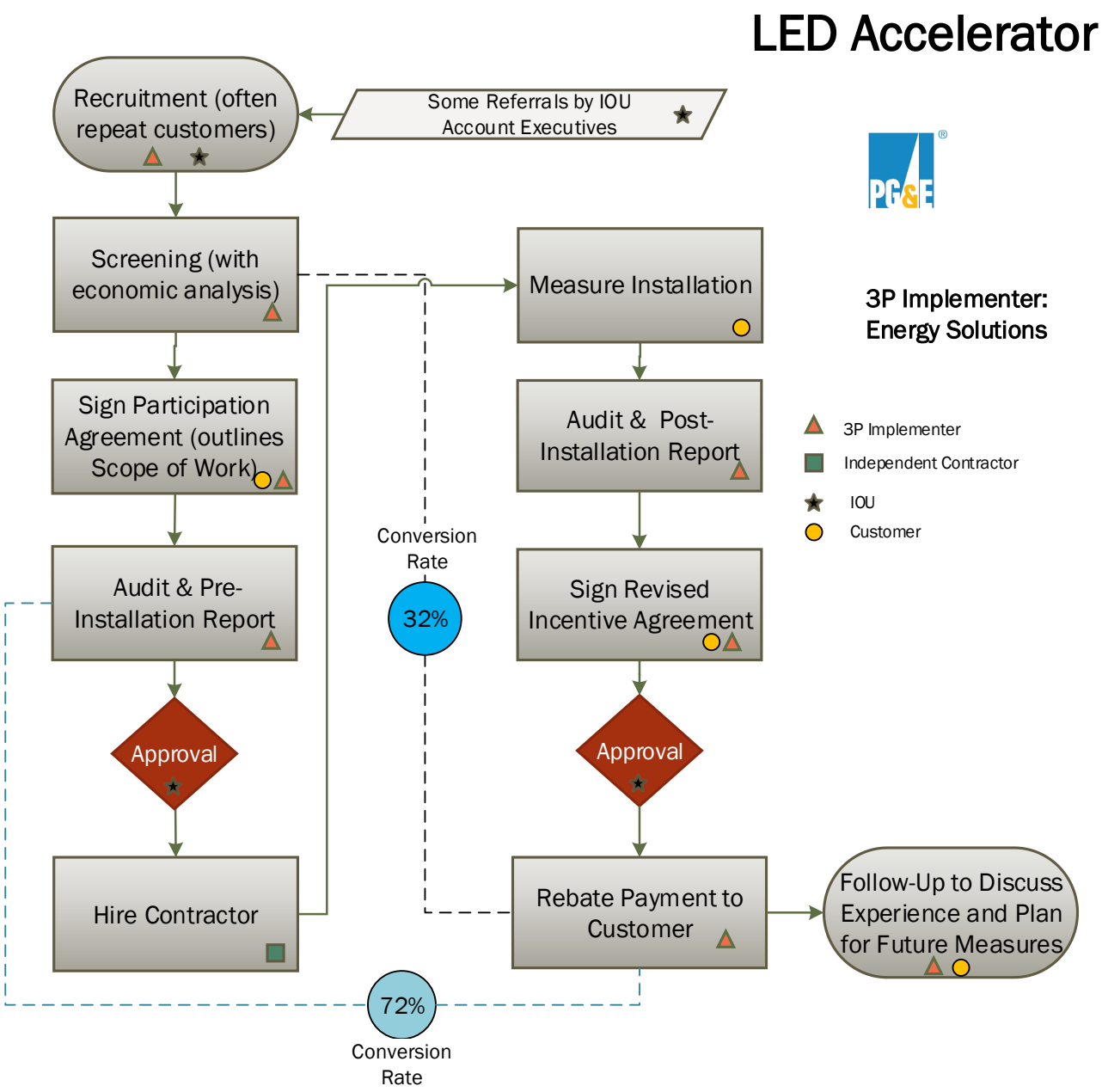
- Telephone screening to see if a customer qualifies; the customer needs to meet a minimum kW requirement (20 kW)
- Economic analysis of LED upgrades
- On-site audit to collect baseline conditions and post-audit for post conditions
- Program application for the customer

- Verification, paperwork requirements
- Incentive payment: Writes check to participant for his estimated rebate amount (the implementer is paid for performance and also reimbursed for amount it paid to the customer)

Figure 20 outlines the key implementation activities involved from the first step of finding customers to the final step of completing an energy efficiency project. The program performs minimal marketing because the implementer has developed existing relationships with large commercial businesses in California for the past 25 years. As such, most program participants are repeat customers who want to do more at the same or another location. However, some participants enter the program as referrals from PG&E's Energy Solutions and Services representatives. According to the program-tracking data, for 2013–14, the conversion rate from the telephone screening to completed projects was 32%, and the conversion rate from the on-site audit to completed projects was 72%. Both rates are useful, because they show that more customers drop out early on when designing a potential upgrade. Once a participant has developed a scope of work and the implementer conducts the site inspection, fewer customers dropped out. If they did drop out, it was most likely due to project feasibility issues.

LEDA does not coordinate with any LGPs or with any of PG&E's energy efficiency programs. CORE and this 3P program operate separately. Nevertheless, 3 of 11 participants reported that the program implementer helped them identify other resources or programs for further energy efficiency upgrades.

Figure 20. LED Accelerator Implementation Model



Participant Feedback on Program Value and Effectiveness

The evaluation team identified 236 unique service account IDs for LEDA in the CPUC's Program Database from May 2015.[27] However, the data review revealed several duplicate contact names or phone numbers because the program worked with multisite retail stores and one individual commonly oversaw projects at different sites. The removal of duplicate contact information reduced the sample frame to 36 unique participants defined by phone and contact name. Given the small sample, a trained analyst called all 36 contacts and completed 11 interviews, for a completion rate of 31%. These 11 respondents represented 17% of all sites defined by unique address and 12% of total energy savings (MMBTU).

Value

Table 53 presents the key program features designed to help commercial customers upgrade to LED lighting. The table also shows how many participants did not receive a given feature, which gives an indication of how much the target market needs the features to get energy efficiency upgrades.

The data show diverse uptake of program features, indicating diverse market needs for LED lighting among commercial customers in the retail and grocery sector. This finding aligns with the program implementer's assessment of the target market and suggests that the program's strategy to tailor support to specific customer needs is appropriate. According to program implementation staff, some participants know what they want and others need help in developing the scope of work.

Table 53. LED Accelerator Program Features

Program Feature	Survey Wording	Did Not Receive Feature (n=11)
Rebate	Financial assistance to help offset project costs	1
Audit/Identify Energy Savings	Help to identify the energy saving opportunities at your facilities	2
360 Project Assistance	Someone to assist with all aspects of the project from beginning to end	2
Sector Expertise	Advice from someone who is knowledgeable about LED options for retailers	3
Product Recommendations	Help to select the most energy efficient LEDs	4
Economic Analysis	Help to calculate the costs and payback of the recommended products	5
Contractor Identification	Help with finding a contractor	8

Participants who received a given program feature rated its importance on a scale from 0 to 10, where 10 means a feature was "critically needed" to upgrade to LEDs and 0 indicated that "it was not needed at all." Table 54 presents the distribution of participant scores and the average importance score for each program feature.

Participants who used the program features highly valued the program's technical assistance with mean importance scores of 7 or higher for Economic Analysis, Sector Expertise, Product Recommendations, 360 Assistance, and Audit. These findings confirm that many customers in the target market need the program's

[27] The evaluation team used the CPUC's Program Database from May 2015 to develop the survey sample. This database version included claims from January 2013 to December 2014, but was not the final database for the 2013-14 cycle. Nevertheless, the number of unique service account IDs was consistent between the two database versions.

help to identify and assess more energy efficient lighting solutions. Importance scores show that the rebate was less important to the upgrades than other technical assistance. However, the rebate importance score also has the largest standard deviation, indicating that participants are polarized on this, with some not needing it all but the majority saying it is critically needed.

Table 54. LED Accelerator Program Importance Scores

Program Feature		Importance Score (a)				Mean Importance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	Economic Analysis (n=6)	0	0	0	6	10.0	0.0
	Sector Expertise (n=8)	0	0	0	8	9.6	0.7
	Product Recommendations (n=7)	0	0	1	6	9.1	1.6
	360 Project Assistance (n=9)	0	0	3	6	8.2	2.0
	Audit/Identify Energy Savings (n=9)	0	1	3	5	7.0	3.4
	Rebate (n=10)	0	3	0	7	6.8	4.7
	Overall Mean Importance Score					**8.5**	
Optional	Contractor Identification (n=3)	0	2	0	1	2.7	4.6

(a) Scale: 0–10, where 0 is "not needed at all" and 10 is "critically needed" to upgrade to LEDs. Mean scores do not include "Don't Know" responses.

Effectiveness

Table 55 presents the same program features designed to help companies upgrade to LEDs. The table shows how participants rated the implementer's performance of each feature on a scale from 0 to 10, where 10 represents excellent performance. Participants gave consistently high performance scores for all core features, indicating that the implementer provides high-quality services.

Table 55. LED Accelerator Program Performance Scores

Program Feature		Performance Score (a)				Mean Performance Score	Standard Deviation
		Don't Know	0–3	4–6	7–10		
Core	ROI Analysis (n=6)	0	0	1	5	8.8	2.0
	Product Recommendations (n=7)	0	0	1	6	8.6	2.2
	Sector Expertise (n=8)	0	0	1	7	8.5	1.5
	Rebate (n=10)	0	0	2	8	8.4	2.1
	360 Project Assistance (n=9)	0	0	3	6	8.1	2.2
	Audit/Identify Energy Savings (n=9)	0	1	2	6	7.9	2.5
	Overall Mean Performance Score					**8.4**	
Optional	Contractor Identification (n=3)	0	0	2	1	6.0	1.7

(a) Scale: 0–10, where 0 is "very poor" and 10 is "excellent." Mean scores do not include "Don't Know" responses.

When asked if any additional program features are needed, all participants (100%) said the current program design was sufficient.

Consistent with high performance scores, all participants (100%) said that they would recommend the program to other companies. All participants attributed this either to bill or energy savings (6) or to the rebate to help

upgrade to better equipment (4). One participant further explained that the new lighting looks better, and two others also pointed to easy participation or environmental benefits.

It saved a lot of money and it looks a lot better; it really upgraded the facility. – Participant

It financially makes sense after the rebate and you get to upgrade to a better technology. – Participant

In an industry like this [restaurant], LED installations help avoid having to replace light bulbs all the time, so it helps lower labor time costs, and [we are] being green. – Participant

They are fairly easy to work with and the incentive is good. – Participant

Challenges

Even though satisfaction with the program was high and all participants would recommend the program, 5 of the 11 participants experienced some challenges during project implementation. Two participants pointed to a lengthy implementation process, and one indicated that the implementer missed rebates for upgrade opportunities. Program implementation staff was aware of these issues and explained that some participants experienced delays in project implementation due to the custom measure review process. Program implementation staff also highlighted that some participants received lower rebates than anticipated because the program lowered the incentive amount due to reductions in claimable savings mid-cycle.

It took 4 months. Projects had to move forward and preapprovals were pending due to capital and other things. Some rebate opportunities were lost. – Participants

Two other participants explained that they struggled to develop the scope of work for the project or to compile the information needed for the implementer to help with the scope of work. To prepare for the telephone screening, the program asks prospective participants to provide information on existing lighting and the planned retrofit (type, wattage, quantity, usage), as well as envisaged LED models and brands. The two participants who mentioned that this was difficult pointed to problems finding information about the amount of existing fixtures but also more broadly to understanding how the retrofit would look. One of them also noted a lack of follow-up after their first meeting.

At the beginning, it was [challenging] to find out the amount of fixtures and where they are and then trying to figure out what to retrofit to. – Participant

Understanding the scope of the project [and] understanding what was needed with the respective partners for the rebate program [was challenging] …. They came in, had a meeting and then just disappeared into thin air. – Participant

The fifth participant who reported problems during project implementation felt that the program could have spent less time on facility audits.

We had multiple auditors come through and spent a lot of time on it when I don't think it needed that much time spent on it. – Participant

2.3 Participant Survey Instrument

Introduction & Screener

Hi, my name is_____ from Opinion Dynamics, calling on behalf of the California Public Utilities Commission. I'm calling regarding <COMPANY>'s participation in Pacific Gas & Electric's EnergySmart Grocer Program back in 2013 or 2014.

[IF CONTACT AVAILABLE] May I please speak with <CONTACT>?

[IF NO CONTACT AVAILABLE] May I please speak with the person who is most familiar with the energy efficient upgrades installed through this program?

[IF NEEDED: The program's contact was likely someone who handles facility or energy management across several store locations. Could you provide me with the name and phone number of someone who might be able to help find the right person?]

[IF NEEDED: The program was run by CLEAResult, they provided consultation and incentives for refrigeration or other energy efficient upgrades in your business.]

S1. Are you the person most familiar with the equipment upgrades that were installed through the program?

[IF NOT THE RIGHT PERSON, INTERVIEWER WILL ASK S1A]
S1A. Could you provide me with the contact name and phone number of the person who was involved in getting the rebates through the program?

00. [OPEN END. AFTER FILLING IN CONTACT NAME AND PHONE NUMBER, ASK FOR A GOOD TIME TO CALL THAT PERSON, THANK AND TERMINATE]
98. (Don't know) [THANK AND TERMINATE]
99. (Refused) [THANK AND TERMINATE]

I'm calling to learn about your experience with the program. This survey should take no more than 10 minutes, and any information you share will be kept anonymous.

[IF NEEDED: We were hired by the California Public Utilities Commission to gain customer feedback.]

[IF NEEDED: We understand you may have participated in more than one location.]

Target Market Characteristics

Q1. To start, I'd like to understand how easy or difficult it is to get energy efficiency projects approved at your company. Which of the following best describes your company's process for approving energy efficiency projects, similar to the ones you received through the program?

1. It is easy; it only requires one or two people's approval
2. It is somewhat difficult; it requires several decision makers
3. It is very difficult; it requires several layers of decision making
98. (Don't Know)
99. (Refused)
00. (None of the above, please describe _____)

Q2. What are the main barriers for your company to upgrade to more energy efficient equipment? [MULTIPLE RESPONSE]

1. (No time)
2. (No money/lack of capital)
3. (Lack of knowledge)
4. (There are no barriers)

00. (Other: Specify)
98. (Don't know)
99. (Refused)

[IF NEEDED: We know you performed energy efficiency upgrades through the SmartGrocer program. We are just trying to understand if there are any reason that might make it difficult for you to make such upgrades without the program. If you don't think there are any barriers, I can record that.]

Value and Effectiveness

Now thinking back to when your company decided to participate in the program, we'd like to understand which program services were critical to your company's ability to upgrade to more energy efficient equipment?.

I'm going to read a list of services that the program offered. For each, please rate how much your company needed that service to upgrade to more energy efficient equipment. I will then follow up with how well the program performed that service for you, on the assumption they did provide you with the service. Please let me know if they did not.

V1. [FIRST SERVICE READ] On a scale from 0 to 10, where "0" is "not needed at all" and "10" is "critically needed", in order to upgrade to more energy efficient equipment, how much did your company need [INSERT A-H, ROTATE ORDER FOR EACH RESPONDENT]? [SECOND SERVICE AND BEYOND SHORTEN TO] And how much did you need [A-H]… [REPEAT SCALE IF NEEDED] [0-10, 98 = DON'T KNOW, 96 = NOT APPLICABLE/DID NOT RECEIVE THAT SERVICE]

V2. [ASK IMMEDIATELY AFTER EACH A-I ITEM, IF ITEM SCORE IS NOT 96] [FIRST SERVICE READ] And, on a scale from 0 to 10 where "0" is "very poor" and "10" is "excellent", how well did the program perform this service for you? [SECOND SERVICE AND BEYOND SHORTEN TO] And how would you rate the program's performance for this service? [REPEAT SCALE IF NEEDED] [0-10, 98 = DON'T KNOW, 96 = DID NOT PERFORM THIS SERVICE]

a. Help to identify energy saving opportunities at your business [TECHNICAL ASSISTANCE-AUDIT]
b. Help to select the right equipment to save energy [TECHNICAL ASSISTANCE-MEASURE EXPERTISE]
c. Help to calculate the costs and payback of the recommended equipment [TECHNICAL ASSISTANCE-ROI]
d. Help with finding a contractor [TECHNICAL ASSISTANCE – CONTRACTOR IDENTIFICATION]
e. Help reviewing contractor bids [TECHNICAL ASSISTANCE – CONTRACTOR BID]
f. Someone to assist with all aspects of the project from beginning to end [TECHNICAL ASSISTANCE-RESOURCES]
g. Financial assistance to help offset project costs [INCENTIVES-REBATE] [IF RESPONDENT STATES THERE WAS NO ASSISTANCE: We are referring to the rebate you received from the program to help lower the costs of the equipment upgrades.]
h. Information to help you get the project approved internally [TECHNICAL ASSISTANCE-DECISION-MAKING]
i. Advice from someone who is knowledgeable about energy efficient equipment for grocery stores [SECTOR EXPERTISE]

V3. Beyond these services, was there anything else that the program provided to you that was critical to your ability to upgrade to more energy efficient equipment?

1. Yes
2. No [SKIP TO V5]
98. Don't Know [SKIP TO V5]
99. Refused [SKIP TO V5]

V4. What did the program provide? [RECORD OPEN END]

81. [OPEN END]
82. [OPEN END]
83. [OPEN END]
98. (Don't know) [SKIP TO V5]
99. (Refused) [SKIP TO V5]

V4a. On the same need scale from 0 to 10, where 0 is "not needed at all" and 10 is "critically needed", how much did you need this to upgrade to more energy efficient equipment? [[SUMMARIZE] [V4=81]] [0-10, 98 = DON'T KNOW, 99 = REFUSED]

V4b. And from 0 to 10, well did the program perform this service for you? [REPEAT SCALE IF NEEDED, where 0 is "very poor" and 10 is "excellent"] [RECORD 0-10, 98 = DON'T KNOW, 99 = REFUSED]

[ASK IF V4=82]
V4a2. On a scale from 0 to 10, where 0 is "not needed at all" and 10 is "critically needed", how much did you need this to upgrade to more energy efficient equipment? I'm referring to what you just said about [[SUMMARIZE] [V4=82]] [0-10, 98 = DON'T KNOW, 99 = REFUSED]

[ASK IF V4=82]
V4b2. And from 0 to 10, how well did the program perform this service for you?
[REPEAT SCALE IF NEEDED, where 0 is "very poor" and 10 is "excellent"] [RECORD 0-10, 98 = DON'T KNOW, 99 = REFUSED]

[ASK IF V4=83]
V4a3. On a scale from 0 to 10, where 0 is "not needed at all" and 10 is "critically needed", how much did you need this to upgrade to more energy efficient equipment? I'm referring to what you just said about [[SUMMARIZE] [V4=83]] [0-10, 98 = DON'T KNOW, 99 = REFUSED]

[ASK IF V4=83]
V4b3. And from 0 to 10, how well did the program perform this service for you?
[REPEAT SCALE IF NEEDED, where 0 is "very poor" and 10 is "excellent"] [RECORD 0-10, 98 = DON'T KNOW, 99 = REFUSED]

V5. Beyond what we have spoken about, is there anything else the program could have provided that would have been helpful? [OPEN END]

Implementation

I now have just a few more questions before we end the survey.

I1. Did the program staff refer you to other resources, such as other programs or rebates available, for further energy saving opportunities?

1. Yes
2. No
98. (Don't Know)
99. (Refused)

I2. Did you experience any challenges during the project?

1. Yes
2. No [SKIP TO I3]
98. (Don't Know) [SKIP TO I3]
99. (Refused) [SKIP TO I3]

I2a. What challenges did you experience?

00. (Other [RECORD OPEN END]

I2b. Were these challenges that the program, or the implementer CLEAResult, could have helped you address?

1. Yes
2. No [SKIP TO I3]
98. (Don't Know) [SKIP TO I3]
99. (Refused) [SKIP TO I3]

12c. Did they help you overcome these challenges?

1. Yes
2. No [SKIP TO I3]
98. Don't Know [SKIP TO I3]
99. Refused [SKIP TO I3]

I2d. Please describe how the program helped you overcome these challenges.

00. [OPEN END]

Recommendations

I3. Would you recommend the program to other businesses?

1. Yes [SKIP TO I3a]
2. No [SKIP TO I3b]
98. Don't Know [SKIP TO CLOSING]
99. Refused [SKIP TO CLOSING]

I3a. Why would you recommend the program?

00. [OPEN END]

I3b. Why would you not recommend the program?

00. [OPEN END]

Closing

Those were all the questions I had for you today. Thank you for your participation in this survey.

2.4 Case Study Literature

Below we present the secondary sources that support our literature reviews.

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3. Program-Specific Chapters

For each program, the following section details the program characteristics, implementation strategy, *ex-ante* energy savings and spending, value in the marketplace and the implementer's role in program delivery. All findings in these chapters are based upon summarizing information gathered from depth interviews with IOU management staff and implementation staff in addition to information found in the 2013-14 program implementation plans, 2013-14 Monthly Energy Efficiency Program Reports submitted to http://eestats.cpuc.ca.gov/ as of December 2014[28], and the CPUC's final program database for the 2013-14 program cycle.

Multiple acronyms are used throughout this section. Below is a list of all acronyms and their definitions:

Acronym List

ACCA= The Indoor Environment & Energy Efficiency Association

AERCx= Analytics Enabled Retrocommissioning

ANSI=American National Standards Institute

ASHRAE= American Society of Heating, Refrigerating, and Air-Conditioning Engineers

CFL= Compact Fluorescent Lamp

CPUC= California Public Utilities Commission

CUBE= Commercial Utility Building Efficiency

DDC= Direct Digital Controls

DEER= Database for Energy Efficiency Resources

DR= Demand Response

EE= Energy Efficiency

EMS= Energy Management System

ES&S= Energy Solutions & Services

ESCO= Energy Service Company OR Energy Savings Company

FESS= FESS Energy Inc.

HEEP= Healthcare Energy Efficiency Program

[28] Versions used: PGE.MN.201412.1, SCE.MN.201412.1, SCG.MN.201412.3, SDGE.MN.201412.5

HMG= Heschong Mahone Group, Inc.

HVAC= Heating, Ventilation, and Air Conditioning

IDEEA 365= Innovative Design for Energy Efficiency Activities 365

IDSM= Integrated Demand Side Management

IOU= Investor Owned Utility

LGP= Local Government Partnerships

NAICS= North American Industry Classification System

OBF= On-bill financing

OSHPD= California Office of statewide Health Planning and Development

PECI= Portland Energy Conservation, Inc. (acquired by CLEAResult in October 2014)

PG&E= Pacific Gas & Electric

PTAC= Package Terminal Air Conditioner

PTHP= Package Terminal Heat Pump

QA/QC= Quality Assurance/Quality Control

RCx= Retrocommissioning

RFP= Request for Proposal

RHA= Richard Heath and Associates, Inc.

SCE= Southern California Edison

SCG= Southern California Gas

SDG&E= San Diego Gas and Electric

SEEP= School Energy Efficiency Program

SoW= Statement of Work

TEEA= The Energy Alliance Association

VFD= Variable Frequency Drive

3.1.1 SW-COM Direct Install

Program Characteristics

IOU	SDG&E, SDGE3226
History	Ongoing since 2010 in this design, but started earlier as Mobile Energy Clinic
Target market	Downstream: Horizontal market expertise; Small and medium size businesses; Electric demand <100 kW per month
Measures offered	• Lighting • HVAC & Programmable Thermostats (added early 2014) • Refrigeration
Services offered	Audit Technical assistance Direct installation
Measure Impact Type	Deemed
Value/Why it originated	Energy savings in hard-to-reach market
How it differs from Core	One-stop-shop experience; free audit and direct install measures
Same Measures in Core	Yes
What is innovative	None, strategy to reach market
Fuel Focus	Electric, Therm and Some DR

Delivery Overview

Implementer	Matrix Energy Services & Synergy Companies
Delivery Model	ASHRAE Level 2 audit provides recommendations for direct install and other measures; Customer signs authorization form; An appointment is set for equipment installation; Implementer randomly inspects 25% of projects for QA/QC and conducts a customer feedback survey
Marketing approach	Direct & indirect: Leverage local governments and Faith Based and Community Based Organizations; marketing materials
Coordination with Core	Yes, Referrals to Core for measures not covered in the program;
Coordination w/ Other Programs	Referral to on-bill financing (OBF) for larger projects; Coordination with Demand Response Program for programmable thermostats
Work with LGPs	Yes
Reliance on LGPs	Partners with cities and chamber of commerce to promote program; Some LGPs perform audits and then refer customers to 3P program if measure needs align
IOU Support	Marketing, billing data access, audit tool, communicating regulatory requirements
Customer Incentive	Free
Implementer Incentive	Paid set amount per measure installed
Installation	Mixed outsourced and in-house; majority in-house
Audit type	ASHRAE Level 2

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$23,792,028	31,820,791	7,794	-9,572
Actual (b)	$23,664,426	36,377,117	9,486	-10,428
% Goal achieved	99%	114%	122%	109%
Participants (c)	5,186			
Cost Effectiveness (d)	Net TRC: 1.09	Net PAC: 1.09		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report from December 2014 covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6).

Program Value

Marketing Approach and Reliance on Local Government Partnerships

Customers are identified through a mix of implementer, IOU and Local Government efforts. The implementers conduct some door-to-door marketing. SDG&E also generate leads through call/mail/email campaigns and customer service representatives. Referrals from past participants is very common in this program, according to the implementer. SDG&E and the implementer also collaborate with the Cities and Chambers of Commerce to promote the program to small and medium businesses, For example, the IOU partnered with the City of Chula Vista that has its own Green Business Program. When the City of Chula Vista is promoting the Green Business Program in the community, the City also introduces the 3P program to customers at the same time and provides ongoing leads to the program.

> *[SDG&E] partners with the City of Chula Vista and they have their own Green Business program where they go out to businesses and let them know what they can improve…when they go out to the business they would introduce [the Direct Install Program] to the customer for us and they work pretty much directly with the implementation contractors and provide the leads to our contractors and go from there. Then we have outreach people going out to the Chamber of Commerce, so when they have meetings with the businesses then we can be there to promote DI.*
> –SDG&E Program Management Staff

> *[SDG&E has] been working with [Cities and Chambers of Commerce] for several years now and that kind of goes in waves…I believe [the City of Chula Vista has] a requirement out there that if you are a new business or are renewing your business license then [the City has] their team go out and do a basic energy assessment. And then through that, they will give us leads for customers that might be interested in the program. So then we will send our own people out to do an assessment, an audit, and make sure [customers] qualify and see what is available to them.* –Program Implementation Staff

Value/Filling a Need in the Marketplace

The program is designed to garner energy savings from hard-to-reach small and medium businesses who do not have the resources (monetary, personnel, or energy efficiency knowledge) to install energy efficient upgrades on their own. It is designed as a no-cost program to customers and as a one-stop-shop experience.

The implementer has unique expertise working with small and medium businesses specifically in San Diego where some regional nuances exist regarding building practices. The implementer has experience with some unique challenges amongst businesses whose facilities may differ from industry norms to which manufacturers commonly design. The implementer has advanced on a learning curve for how to install measures in non-standard configurations.

> *[One of the program strengths is in] tackling some barriers as far as installation. [For] some measures there was a big learning curve [because] the people who manufacture items had never been to the kind of places that we install them. They manufacture them for standard type places, not the Mom and Pop stores that have been monkeyed with…and there are parts flowing back and forth across the border and you don't know who has done work on what. It could be a variety of measures that sometimes there has been a learning curve as far as how to get those installed in non-standard configurations.*
> – Program Implementation Staff

Coordination with Other Programs for Deeper Savings

This program has coordinated with the CORE program, Finance Program and the Demand Response initiatives. The facility level audit enables this program to identify and refer a number of customers to further energy saving and incentive opportunities.

The implementers conduct an ASHRAE Level 2 audit and recommend a number of energy upgrades. The program encourages installation of all recommended measures that are offered through the 3P program. If the audit produces further recommended measures, then the program refers the customer to SDG&E's Core programs. If the project is large enough, then the implementer may refer the customer to the financing program.

> *Right now after [customers] agree to participate, [they] get an Energy Audit from [the 3P program]. From that audit report, some of the measures will be covered in [the 3P program] and some will not be. For measures that are not covered, the 3P implementers will offer to install them through the Core rebate program or even the incentive program. So it is still a one-stop shop for the customer. The 3P implementer will help them through the rebate program, the rebate applications and in some cases, extreme cases where they have a large project, they can also go through a financing program. For example, we go to a customer who owns a restaurant. The audit recommendations would ask them to replace lighting with CFL lighting, which is covered by the 3P program or the LED lighting program. The customer may not like CFL lighting because they have a dimming switch for the lights. So they would go through the rebate program and get the LED bulbs.*
> *–SDG&E Program Management Staff*

In the 2013-14 program cycle, the program added programmable thermostats to their list of eligible measures. The program offered thermostats in coordination with SDG&E's Smart Meter team so that the customer is automatically enrolled in a demand response program. The 3P program can only claim savings if there was no programmable thermostat beforehand so this broadened their ability to install thermostats.

> *We included a new measure, a new idea for a measure, which is the programmable communicating thermostat, so Wi-Fi thermostats that we offer through the program offered by the Smart Meter team, which is an implementation channel for them. So we also offer that to our customers for free. When the customer gets the thermostats, they are automatically enrolled in the DR program. So the DR program, the Smart Meter teams would actually claim that. The EE savings we are only claiming it if the customer has a non-programmable thermostat as a base case.* –SDG&E Program Management Staff

This is a good example of a program that could easily add a non-DEER measure and thus, add an IDSM component to an energy efficiency focused program. However, adding a new measure requires an investment in customer education.

> *For this case, it is a little special because it is not your ordinary measure where you install and just leave behind. It is a measure that requires a lot of education to the customer. Therefore, before we educate our customers we actually have multiple trainings with the contractors to make sure they know what the measure is about and how to set up the thermostats and educate the customer on how to use the thermostats. Then with the customer it is not like we can just install and leave. We have to stay there and help them set up, help them connect the thermostats to the Wi-Fi signal and educate them on how to use it.* -SDG&E Program Management Staff

Implementer Role

This program has two implementers, Matrix Energy Services and Synergy Companies, who focus on different geographic areas in SDG&E territory. The implementers do not have distinct areas of San Diego now but plan to change in 2015 so that the implementers will have two distinct areas, such as East and West or North and South. This change should reduce the implementer's travel time and costs.

Implementer conducts the following:

- Marketing,
- Audit, Schedule install within 2 weeks,
- Installation of measures: 75% in-house and outsource as needed:
- Verification/QA: Implementer does a random inspection of 25% of projects,
- Collects customer feedback in survey: customers fill out a customer feedback survey, feedback is mostly positive according to the implementer.

3.1.2 LodgingSavers

Program Characteristics

IOU	PG&E, PGE210111
History	Ongoing since 2006
Target market	Downstream: Vertical market expertise; Small and large hotels, lodging services
Measures offered	• Comprehensive lighting and controls retrofits (exterior, common areas, guest rooms); • Guest room faucet restrictors and low flow shower heads; • Package AC refrigerant charge and airflow adjustments (RCA); • Package AC coil cleaning; • Retrocommissioning (RCx); • Package AC replacement, package terminal air conditioner (PTAC) and package terminal heat pump (PTHP) replacement; • Vending machine controls and food service equipment replacement; • In-room PTAC controls; and • Refrigeration motors, controls, and door closers
Services offered	Direct Installation (for smaller customers) via program-vetted contractors Energy audit Technical assistance
Measure Impact Type	Deemed for smaller facilties, custom for larger projects
Value/Why it originated	Energy savings in hard to reach markets
How it differs from Core	Reach smaller customers than Core, technical assistance, direct install measures; ongoing relationship with customer for more comprehensive, future retrofits; Rebate is directed to installer, customer pays copay after installation is complete and quality assurance inspection conducted. 100% post-installation QA site inspection. Use of Modified Lighting Calcualtor.
Same Measures in Core	Yes
What is innovative	Strategy to reach market.Use of Modified Lighting Calculator allows for quick adoption of new lighting technologies not possible through Deemed methodology..
Fuel Focus	Electric and gas

Delivery Overview

Implementer	Ecology Action
Delivery Model	Site access agreement; Facility-wide audit provides recommendations for direct install measures; Custom projects receive a more detailed audit conducted by licensed engineers; Implementer works with program and non-program contractors to install measures; allows program to support local contractor pool and PG&E Trade Pros Measure verification of all projects by Implementer and PG&E's central inspection team; Invoicing; Email customer survey by implementer; Random participants selected for PG&E's follow up survey
Marketing approach	Direct: Telemarketing; industry associations; collateral,mailers, limited TV and radio

Coordination with Core	Yes – for one-off measures not mapped to program
Coordination w/ Other Programs	Yes, Fishnick for kitchen needs,
Work with LGPs	Yes
Reliance on LGPs	No
IOU Support	Some leads from ES&S, engineering review (custom), verification, marketing collaboration, presentations at annual IOU Sales Forums and other events
Customer Incentive	Rebate, majority Direct Install
Implementer Incentive	Performance-based: rate per kWh saved
Installation	In-Program and Non-Program Installers, Limited Self-Install
Audit type	Facility-wide, Comprehensive

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$6,542,368	13,045,130	3,766	9,592
Actual (b)	$9,798,604	19,024,346	5,551	89,407
% Goal achieved	150%	146%	147%	932%
Participants (c)	207			
Cost Effectiveness (d)	Net TRC: 2.26	Net PAC: 2.51		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report from December 2014 covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6

Program Value

Marketing Approach

The program is self-marketed through mailers, web-based outreach, or via local government partners through limited radio or TV announcements, but the majority of projects come from grassroots outreach, door-knocking, or geography-based or market-based campaigns. Most small and medium businesses do not open their mail or marketing emails, so direct phone calls or showing up in-person have been most effective at recruitment.

The majority of leads come from this direct canvassing work or by word of mouth from past program participants. In most cases, potential participants have received a direct call or site visit from a member of Ecology Action's field staff.

Additionally, the implementer carefully vets customers prior to committing resources to projects, and attributes this step to the program's very high close rate of over 75% (as reported during depth interviews with implementation staff).

Value/Filling a Need in the Marketplace

Whereas the Core program is geared towards large customers only, the 3P program successfully addresses lodging businesses of every size. With its hybrid approach, the 3P program reaches small mom and pop/bed and breakfasts with direct installation measures, and serves large hotels and chains with comprehensive solutions. Of the 15,000 hotels and motels in PG&E territory, less than 1,000 are over 200 kW (according to the implementer). Most of these businesses are owned by individual owners or small chains. The Direct Install portion of the program offers personalized assistance to these hard to reach customers, something the Core Program does not. Additionally, the program collects a customer co-pay on most jobs.

> *On the smaller side it always helps to have a direct install component where [the implementer is] actually actively reaching out to the smaller mom & pop type bed & breakfast places. When you can get more direct outreach going you can tailor to the need and provide additional assistance. But I think on the custom side one of the benefits is establishing that long-term relationship.*
> *– PG&E Program Management Staff*

The 3P program provides detailed engineering calculations, evaluation and assessment of customer facilities in a complete package for the customer, and does so quickly – for some Direct Install customers this can even be done in their parking lots after the site assessment. Users enter baseline equipment and upgrade equipment to produce energy savings numbers that align with the CPUC-allowed base case and replacement conditions reported for savings. The report can be tailored to present detailed information or a high-level summary, and Ecology Action makes an effort to identify all measures all at once to maximize energy savings. (Ecology Action uses a self-developed tool called "Energy Orbit" to do the analysis. The tool is Salesforce-based). The report delineates total project costs, total incentives, copay, ROI, simple payback, and bottom line costs. Being able to present information quickly and in a user-friendly manner helps customers make an informed decision.

> *I think where you get some additional value is from the implementer in being a third party program. They are trying to get as much energy savings as they can. They provide the technical assistance that helps to identify [measures]. They put the whole package together, the calculations, they run it through the whole process. So even though in the larger projects the implementer is not doing the installations directly, there is still a contractor doing the installation work. Everything else in terms of walking it through the process and bringing all the documents together, providing the calculations, the hand holding I believe helps drive more customers to participate and to do more than they otherwise would have done. – PG&E Program Management Staff*

Additionally, the ongoing technical assistance offered establishes trust and builds long-term relationships where customers know they have somewhere to turn to if needs arise in the future. For large customers especially, the handholding provided by the 3P implementer really helps drive participation, and encourages more extensive projects.

Coordination with Other Programs for Deeper Savings

In general measures that are not offered through LodgingSavers can be installed through other programs (e.g., Core or programs that offer kitchen appliances, etc.). The ES&S account representative will generally work with Ecology Action staff to help customers through the right process.

Implementer Role

Ecology Action is the implementer. They also implement Casino Green and RightLights for PG&E. The implementer conducts the following:

- Marketing and Outreach,
- Engineering Assessment/Evaluation,
- Vets program and non-program contractors who do the majority of the installation,
- Verification/QA: Once a contractor informs Ecology Action that a project has been completed, the implementer will visit each site to perform a quality assurance check to see if measures were installed to specification and if customers are satisfied,
- Incentives: Will pay the Program Contractor once verification is complete. The contractor bills each customer for the difference between the project cost and the incentive check, and will send a copy of the bill to the implementer, as part of the implementer's QA process,
- Collects customer feedback in survey: customers fill out an internal customer survey on *GetFeedback*, which asks about their experience with the specific contractor that performed the work and questions to ascertain ways to improve their internal process.

3.1.3 School Energy Efficiency Program (SEEP)

Program Characteristics

IOU	PG&E, PGE210112
History	Started in 2006 as a non-resource program focused on education by RSG (now CLEAResult). In 2014, PG&E added a Prop 39 Bonus to support schools with Prop39 planning. Program extended into 2015.
Target market	Downstream: Vertical market expertise; Pre-school (pre-K) to 12 public school districts
Measures offered	• Lighting and control upgrades • HVAC retrofits • Pool cover replacement • Pool pump VFDs • Heater and boiler upgrades • Strip curtains and kitchen equipment replacement • Vending misers • Computer power management software • Energy management system • RCx
Services offered	Energy audit Technical assistance Installation support Education Prop 39 Bonus
Measure Impact Type	Custom and Deemed
Value/Why it originated	Generate savings in school segment, which lacks financial and human resources to conduct energy efficiency upgrades
How it differs from Core	Technical assistance, segment expertise to navigate Proposition 39
Same Measures in Core	Yes
What is innovative	None, segment strategy
Fuel Focus	Electric and gas

Delivery Overview

Implementer	CLEAResult
Delivery Model	Access agreement for billing data and inspection; Phone screening to identify potential projects; Walk-through audit if deemed necessary such as for Prop39 planning; provision of summary of high potential energy savings recommendations; Customer signs program participation agreement; Additional data collection via phone or on-site visit as needed; Installation by contractors; Review of invoice and verification by implementer (with possible site inspection and data logger installation); Rebate processing annual customer satisfaction survey
Marketing approach	Direct & Indirect: Leverage PG&E Account Representatives and some direct outreach to districts
Coordination with Core	Some

Coordination w/ Other Programs	Refer customers to on-bill-financing program
Work with LGPs	Yes
Reliance on LGPs	Coordinates with Energy Watch to avoid targeting the same target market but does not rely on generating leads
IOU Support	Referrals from Account Reps; review final program documentation
Customer Incentive	Deemed rebates and custom incentives
Implementer Incentive	Performance based: rate per kWh saved
Installation	Contractors
Audit type	Walk-through, facility-wide, and comprehensive

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$5,220,500	5,480,945	809	532,419
Actual (b)	$5,133,970	7,327,502	641	318,835
% Goal achieved	98%	134%	79%	60%
Participants (c)	117			
Cost Effectiveness (d)	Net TRC: 1.08	Net PAC: 1.27		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls)

Program Value

Value/Filling a Need in the Marketplace

The School Energy Efficiency Program is designed to gather gas and electric savings from customers in the public school sector who typically lack financial and human resources to pursue energy efficient upgrades on their own. While all measures are available through PG&E's Core portfolio, the program offers facility audits, technical assistance and rebates to enable comprehensive turnkey installations.

The program originally emerged as a non-resource program focused on education. It is now the most comprehensive among PG&E's school programs.

> *The strength I will say it is a program that is tailored to the market segment it serves. Schools have to often, because they are public agencies, go through public procurement and contract in a certain manner. So this program is structured to kind of be the third party energy advisor to that process. The implementer we use isn't a contractor. So they cannot do the work themselves. Instead they help with the front end processes like the energy assessment, creating the initial specs that then the customer can go and get a little more detailed on with contractors. Then once the school has selected a contractor on their own entirely then the implementer comes*

> *back in and are able to consult on making sure that they purchase qualified products from our qualified product list and then monitor, verify and inspect the project on the back end. So I think it is well suited and because it is a public school program our implementers have been able to specialize themselves and know the unique constraints of school districts, especially as it relates to… actually all measures are special in schools. Computer power management in their computer labs to lighting and the unique classroom specifications we have for lighting in order to enable learning environments. So I think the strengths, to sum it up, is that the program is tailored to the market segment and allows for specialization. – IOU Program Management Staff*

The program implementer further provides education on the benefits and the implementation of energy efficient upgrades. For example, the implementer helped customers navigate upgrade opportunities that emerged with Prop 39 funding throughout the past program cycle. To support the program implementer in these efforts, PG&E made a Prop 39 bonus available to the program in 2014.

> *Even though we might not be directly compensated for it, there is a heavy educational component with what we do…For example, Prop 39, we are getting as smart as we can, as fast as we can [to educate customers on] qualifying activities and qualifying projects … how you do them and how you access the funds etc.* – Program Implementation Staff

Marketing Approach and Reliance on Local Government Partnerships

The majority of project leads come as referrals from PG&E Account Representatives who have existing relationships with customers in the school segment. In addition, program implementer staff perform outreach to school districts via phone calls.

> *[The Account Reps] are doing this initial screening, they are doing enough with the facilities and have conversed enough with the customer that they have a sense for whether there is an EE opportunity there.* – Program Implementation Staff

The implementer does not rely on Local Government Partnerships to market the program. However, there is some coordination in areas with active Energy Watch programs (a Local Government Partnership program) to avoid targeting the same customers. In addition, the program may refer customers to Energy Watch if it is a better value for the customer.

> *There are some territories that are Energy Watch territories so we have to negotiate between the two of us… Ultimately, it is what is the better value proposition for the customer [amongst the various programs]… If there is an Energy Watch solution for the customer, which typically does install lighting, then we will coordinate with them because ultimately that is going to be the better deal for the customer.* – Program Implementation Staff

Coordination with Other Programs for Deeper Savings

The program refers customers to PG&E's OBF program (on-bill financing) if project costs are $5,000 or higher. In some instances, coordination occurs between PG&E 3P school programs, which have different program offerings and target markets. In the past, PG&E also facilitated meetings between implementers and sales representatives to discuss PG&E's program offerings in the school sector.

Implementer Role

The implementer offers the program in most counties of PG&E's service territory[29].

The implementer conducts the following:

- Some marketing; although the majority of leads come from ES&S account representatives,
- Customer education, including Prop 39 planning support,
- Facility Audits: the implementer does an initial phone screening and then conducts an on-site visit/audit,
- Installation of measures: The implementer directly installs measures, it has 15 installers in-house and outsources to contractors as needed. The implementer estimated that 75% of the installations are done with in-house installers,
- Verification/QA: The implementer reviews invoices & verifies installation with site visits (implementer inspects 100% of custom projects and 30% of deemed projects),
- The implementer conducts an annual customer satisfaction survey; and informal periodic check-ins with customers.

[29] Counties include: San Francisco, San Mateo, Alameda, Santa Barbara, San Luis Obispo, Fresno, Kern, Kings, Madera, Tulare, Calaveras, Mariposa, Merced, Tuolumne, Butte, Sutter, Yuba, Napa, Solano, Sonoma

3.1.4 Energy Fitness† Program

Program Characteristics

IOU	PG&E, PGE210113
History	Ongoing since 2002; started with a small set of lighting measures under CPUC administration and expanded measure offerings over time. In 2013, the program introduced a customer co-pay.
Target market	Downstream: Horizontal market expertise; Small and medium sized nonresidential customers (demand up to 200 kW) in 13 counties
Measures offered	Turnkey Lighting, Refrigeration, and some HVAC Measures: • Comprehensive lighting and controls retrofits, including fluorescent, LED, bi-level fixtures, occupancy sensors, and time clocks; • Exterior lighting and controls; • Vending machine controls; • Faucet aerators and low-flow showerheads; • Refrigeration measures including: EC motors, LED case lighting, evaporator fan motors, LED light bars, controls, automatic door closers, and night covers; • Pipe insulation; • Pool covers; and • Simple HVAC such as Condenser Coil Cleaning.
Services offered	Energy Audit Direct Installation (with copays to reduce free-ridership) Customer satisfaction surveys
Measure Impact Type	Deemed
Value/Why it originated	Energy savings in hard to reach markets
How it differs from Core	Reach smaller customers than Core, technical assistance, direct install measures; cheaper and more convenient for customer
Same Measures in Core	Yes
What is innovative	None, strategy to reach market
Fuel Focus	Electric

Delivery Overview

Implementer	Richard Heath and Associates, Inc.
Delivery Model	Assessment by RHA; Proposal outlining savings potential are analyzed submitted to the customer; Installation scheduled and conducted by RHA; Inspection by RHA
Marketing approach	Direct: Marketing materials (postcard, flier brochures), website, in-person visit, mailing, toll-free line
Coordination with Core	Some, program assessor is typically paired with PG&E ES&S representative
Coordination w/ Other Programs	Other 3P program might be recommended if customer envisages more comprehensive retrofits; coordination with on-bill financing if upgrades exceed $5,000
Work with LGPs	3P leverages LGPs for outreach and marketing (PG&E training center, training in workforce investment boards; monthly meetings)
Reliance on LGPs	Yes, create “demand”, referrals
IOU Support	Referrals and PG&E trainings through LGP

Customer Incentive	Co-pay
Implementer Incentive	Performance-based per kWh savings
Installation	Implementer or sub-contractor
Audit type	Facility-wide using tablets with RHA-developed software

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$5,426,389	14,853,645	2,771	-79,927
Actual (b)	$4,668,711	10,223,237	2,000	-36,679
% Goal achieved	86%	69%	72%	46%
Participants (c)	626			
Cost Effectiveness (d)	Net TRC: 2.22	Net PAC: 2.22		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls)

†The program is called "Energy Fitness" because at the end of each project the implementer mails a final energy fitness report to the customer. The fitness report is customized to that business, summarizes the work completed and includes recommendations about other opportunities that can be done in the business and other programs they might want to participate in.

Program Value

Marketing Approach

Canvassing. The implementer employs its own sales team comprised of energy advisers on local teams serving the northern portion of the territory, the Stockton area, and Fresno. The advisers really get to know the businesses in their respective area especially since the program has been around since 2002. Energy advisers will canvass different areas in their territory, walking into businesses to look for opportunities and then ask to speak with the facility decision maker to pitch the program.

PG&E Account Representatives. The implementer works closely with PG&E account representatives who will refer customers when they see opportunities. Referrals come from both assigned and unassigned representatives, and the implementer will follow up on any ES&S referrals. PG&E will also provide the implementer with lists of businesses who have not participated in the program or for whom a lot of time has passed since participation. The implementer uses these lists to canvass or target certain areas.

Local Government Partners. LGPs are another lead generator for the program. LGPs have commercial contacts in the community and, as a result of the partnership, the program has done some municipal and school projects. The program is an assigned direct implementer to LGPs and has worked with them since 2006.

Value/Filling a Need in the Marketplace

The program reaches small and medium (<200 kW) HTR customers in the very rural areas of PG&E territory (north of Sacramento). The program is designed to overcome barriers to small business participation in small towns, such as limited time, money and knowledge to install energy efficient upgrades. The program targets customers who traditionally did not participate in Core Programs and was initially designed as no-cost. To accomplish this, the program wanted to be very cost effective and decided to narrow its scope to very budget friendly-high savings measures (mostly lighting). More recently, the program has done much more refrigeration measures and outdoor lighting. A lot of work involves educating customers and the implementer designed the program to have very little disruption to regular business – it is easy to participate and does not require intensive paperwork.

Coordination with Other Programs for Deeper Savings

Coordination with Core. According to the IOU, coordination between Core and the local ES&S account representative plays an important role in recommending what program is best for the customer. Typically, the RHA program assessor (who performs the customer audit) is paired up with an ES&S account representative. After the assessment results are completed, ES&S will select the best program(s) for the customer based on the report. Sometimes measures (such as lighting) can be implemented through the Energy Fitness Program, other times ES&S will refer a schools program or another program. In general, it is cheaper for the customer to go through the 3P program.

Cross-Program Referrals. Multiple measures are often identified in customer's energy fitness reports. If those measures cannot be implemented via the Energy Fitness Program, the implementer will refer the customer to other programs. Oftentimes the implementer makes referrals to Demand Response programs, HVAC quality maintenance programs, and refers them to the PG&E website to look up other 3P or Core Program opportunities. Unfortunately, there is no tracking system in place to follow up on whether customers do pursue other programs. If the customer was referred by ES&S, then generally ES&S will follow up regularly to encourage customers to do more and participate in other programs.

Local Government Partners (LGPs). The implementer meets with LGPs regularly, either weekly or monthly depending on the LGP, to discuss strategies and upcoming campaigns. However, customer referrals are the main LGP contribution to the program. LGP efforts help create demand for the program. For example, PG&E training classes will be brought out to local communities, or PG&E will facilitate training in workforce investment boards. About ninety leads came in to the program via the partnership, so it has been quite successful. Additionally, there is some coordination between LGP and Core. In some instances, the LGP will pay the core incentive, but it will not claim the savings unless the project goes through RHA.

Coordination with LGPs occur in-house with the LGP group. The PG&E program manager also manages other LGP programs (including Energy Watch), and LGP group staff meetings are another great platform on which to share best practices and programs. Monthly LGP partnership meetings are held where Service and Sales groups, RHA and other program implementers, and city representatives all participate.

Implementer Role

The implementer conducts the following:

- Marketing and Outreach,
- Coordination with LGPs,
- Engineering Assessment/Evaluation (using their own tablet software tool),

- Project material purchase and QC (RHA keeps a tight rein over the materials that are used because (a) they want to make sure the measures meet PG&E specifications, and (b) any failures reflect negatively on customer service),
- Project Installation (or RHA will use subcontractors if it is a busy time and RHA doesn't have enough manpower – e.g., if a campaign is very successful and generates lots of demand),
- Verification/QA: RHA will inspect 20% of all the work and up to 100% of a subcontractor's work until that subcontractor has a consistent pass rate,
- Collects customer feedback in two surveys (An installation survey that the crew delivers to the customer before they leave that asks about satisfaction with workmanship and site cleanup, and an overall program satisfaction survey that is sent out with the final energy fitness report).

3.1.5 Energy Savers

Program Characteristics

IOU	PG&E, PGE210114
History	Started in 2002. Program services and measures remained consistent in most parts; however, the program's target market has narrowed as other 3P programs emerged. It is PG&E's intention in 2016 to stop administering 3P DI Programs and instead serve those customers under LGP programs such as Energy Watch.
Target market	Downstream: Horizontal market expertise; Small- and medium sized business customer in the counties of Napa, Sonoma, Solano, Mendocino, and Lake.
Measures offered	Lighting and Refrigeration: • Comprehensive lighting and controls retrofits, including fluorescent, and LED lamps and fixtures; • Exterior lighting and controls; • Occupancy sensors (phased out as of June 2014 with Title 24); • Vending machine controls, and • Refrigeration: Evaporator fan motors, controls, automatic door closers, and strip curtains (phased out in 2015)
Services offered	Energy audit Technical assistance
Measure Impact Type	Deemed and Calculated
Value/Why it originated	Energy savings in hard-to-reach market
How it differs from Core	Active marketing, Free audit, Turnkey, Customer pays copay only
Same Measures in Core	Yes
What is innovative	Strategy to reach market
Fuel Focus	Predominately Electric, very limited therm savings

Delivery Overview

Implementer	TEAA, Inc.
Delivery Model	Audit; Cost savings recommendation report; Program participation agreement; Installation by contractor or customer (self-install) Final installation report
Marketing approach	Direct & Indirect: Leverage outreach through contractors, local city governments, and various green business programs, local chambers of commerce, other business groups, PG&E ES&S representatives initiatives;
Coordination with Core	Referrals to Core for measures not covered in the program through account rep
Coordination w/ Other Programs	Coordinates and shepherds OBF projects though the pipeline
Work with LGPs	Yes, weekly, bi-weekly phone calls, monthly meetings, and some bi-weekly meetings
Reliance on LGPs	Partners with cities and chamber of commerce to develop campaign strategies and promote the program; referrals
IOU Support	Referrals from Account Reps and ES&S
Customer Incentive	Rebate based on kWh paid by TEEA

Implementer Incentive	Performance-based per kWh savings
Installation	Contractor is hired by the customer. TEAA can refer contractors but does not manage the contractor.
Audit type	Facility-wide

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$2,417,320	6,302,595	1,224	-28,731
Actual (b)	$2,645,674	4,146,651	745	-9,850
% Goal achieved	109%	66%	61%	34%
Participants (c)	305			
Cost Effectiveness (d)	Net TRC: 1.76	Net PAC: 1.76		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls)

Program Value

Marketing Approach

The program gets the bulk of its leads from electrical contractors, ES&S, referrals, and Energy Watch Program team members. ES&S has provided many referrals, especially in this past cycle. LGPs refer customers to the implementer and will create joint marketing campaigns; TEAA will occasionally make customer cold calls with LGPs and ES&S. Many of the program participants are repeat customers. Past customers also spread word of the program through word of mouth.

Value/Filling a Need in the Marketplace

This 3P program is one of PG&E's four main regional direct install programs. Customers benefit from turnkey services including an energy audit to identify potential measures and only a copay. The 3P program is more proactively marketed as compared to Core, and benefits from referrals by LGPs. The 3P implementer serves as an advocate for the customer and really provides the technical assistance and handholding needed to get projects implemented. TEEA provides in-depth expertise gained from implementing the program for 12 years.

Coordination with Other Programs for Deeper Savings

TEEA coordinates with LGPs to market the program and serves as another marketing arm to help educate customers on 3P offerings. Aside from referrals, LGPs will create an annual or quarterly campaign strategy in coordination with TEAA. LGPs have tended to focus on their own facilities for opportunities, but more recently have been embracing other sector opportunities, especially hard to reach customers. The Energy Savers program has been rebranded/marketed solely at an Energy Watch Program for the 2015 program year.

Implementer Role

The implementer conducts the following:

- Marketing and Outreach,
- Coordination with LGPs,
- Engineering Assessment/Evaluation,
- Helps identify Contractors for Project Installation,
- Addresses any issues that arise with the product or installation,
- Verification/QA,
- Cuts incentive check to Contractor (or customer if direct install).

3.1.6 RightLights

Program Characteristics

IOU	PG&E, PGE210115
History	On-going since 2005, re-branded to merge with Energy Watch program in 2015
Target market	Downstream: Horizontal market expertise; For-profit small and medium sized commercial businesses (<200 kW) in Santa Clara, Santa Cruz, Monterey and San Mateo
Measures offered	• Comprehensive lighting and controls retrofits, including fluorescent, LED, bi-level fixtures, occupancy sensors, and time clocks; • Quick-saver package (CFLs); • Exterior lighting and controls; • Vending machine controls; • Refrigeration measures
Services offered	Energy audit Technical assistance Direct installation Business support
Measure Impact Type	Majority customized via the Modified Lighting Calculator and limited deemed measures
Value/Why it originated	Energy savings in hard to reach markets
How it differs from Core	Direct install measures; more cost-effective for customer than Core. Rebate is directed to installer, customer pays copay after installation is complete and quality assurance inspection conducted. 100% post-installation QA site inspection. Use of Modified Lighting Calcualtor.
Same Measures in Core	Yes
What is innovative	Strategy to reach market. Use of Modified Lighting Calculator allows for quick adoption of new lighting technologies not possible through Deemed methodology.; Allows for diverse contractor participation and focuses delivery on most cost effective specifications to achieve highest performance.
Fuel Focus	Electric

Delivery Overview

Implementer	Ecology Action
Delivery Model	Site access agreement; Facility-wide audit provides recommendations for direct install measures; Implementer works with program and non-program contractor to install measures; Measure verification by Implementer and PG&E's central inspection team; Invoicing; Email customer survey by implementer; Random participants selected for PG&E's follow up survey
Marketing approach	Direct: Door-to-door marketing, telemarketing, direct mail, in-person visits, program materials, trade shows/chamber mixers, media
Coordination with Core	Yes – close coordination with ES&S to accommodate needs of customers with facilities too large for SMB program and with facilities outside of Implementer's specific delivery territory
Coordination w/ Other Programs	Coordination with on-bill financing if upgrades exceed $5,000
Work with LGPs	Yes

Reliance on LGPs	LGPs help shape marketing strategy, notify implementers of outreach opportunities and identify prospective participants. As of 2015, the program merged with Energy Watch partnership
IOU Support	Accounts reps, limited support from products team, technical team (reporting), engineering reviews, marketing collaboration, presentations at annual IOU Sales Forums and other events, One-off program trainings for ES&S staff
Customer Incentive	Co-pay for direct install measures
Implementer Incentive	Performance based: set rate per kWh saved
Installation	In-Program and Non-Program Installers, Limited Self-Install
Audit type	Facility-wide, Comprehensive

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$9,498,276	19,341,924	2,580	-117,464
Actual (b)	$9,524,667	16,797,299	2,339	-44,473
% Goal achieved	100%	87%	91%	38%
Participants (c)	838			
Cost Effectiveness (d)	Net TRC: 1.37	Net PAC: 1.37		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls)

Program Value

Marketing Approach

The program is self-marketed through mailers, web-based outreach, or via local government partners through limited radio or TV announcements, but the majority of projects come from grassroots outreach, door-knocking, or geography-based or market-based campaigns. Most small and medium businesses do not open their mail or marketing emails, so direct phone calls or showing up in person have been most effective at recruitment. The implementer employs multi-lingual staff, which is key to communicating with many customers in the target market.

The majority of leads come from this direct canvassing work or by word of mouth from past program participants. In most cases, potential participants have received a direct call or site visit from a member of Ecology Action's field staff.

> *We find that in the small/medium business world, most people don't open their mail. Most people don't open spam type e-mail. You really have to walk into the store and tell them what your services are and tell them how easy they are to participate in before they will actually consider working with you.* –Program Implementation Staff

Local government partners (LGPs) primary role is to shape overall marketing strategy. With local expertise, LGPs can also keep implementers informed of upcoming outreach opportunities/events, or help promote the

program locally and generate leads. All LGPs are different – some are more active with on the ground promotion than others.

Value/Filling a Need in the Marketplace

RightLights reaches hard to reach small and medium sized customers with a very comprehensive list of measures, thus leaving few opportunities behind. The premise is to "plant the seed" among current customers for potential future energy upgrades. Measures are offered at low- or no-cost, which helps cash-strapped small businesses implement measures they otherwise would not.

The RightLights program offered through the 3P is less expensive for the customer than through the Core Program (under Core, the customer has to identify measures themselves, identify qualified installers, and pay for this service out of pocket).

Coordination with Other Programs for Deeper Savings

The program coordinates with local government partners to market the program and it offers on-bill financing if upgrades exceed $5,000. It currently does not formally coordinate with other programs for cross-referrals but customers with facilities outside of the territory or with facilities too large to be served by the program are regularly referred directly to other PG&E programs. The Program Manager mentioned that the IOU is already aware of this gap and is currently working on a 2016 RFP to develop a formal, streamlined referral process across programs. Implementers do have access to information about other programs to cross-refer, but referrals are ad hoc and there is no formalized process for implementers to cross-refer through the IOU. There is no financial incentive in place for implementers to cross-refer, incentives are paid only for savings reaped on implementer's own programs. The amount of cross-referral happening is unknown.

Merge with Energy Watch in 2015

As of 2015, there is officially no longer a RightLights Program, as it has merged into existing Energy Watch Program. Energy Watch is implemented under the local government partnerships. The RightLights brand will be dissolved and will operate as Energy Watch (although behind the scenes, the PM will map costs for RightLights back to that program). The public facing brand will be Energy Watch – with one program name and one program administrator. Programs will be defined by geographic area and referred to as "San Mateo County Enery Watch "Silicon Valley Energy Watch", etc.

Prior to the merge, the distinction was that RightLights served all for-profit commercial customers with under 200 kW of demand, while the Energy Watch program served nonprofits, municipalities, and special districts of similar size. Both programs operated in the same territory. 3P programs implemented by other implementers serve furniture stores, dairies, wineries, and some grocery stores and movie theaters.

Implementer Role

Ecology Action is the implementer for RightLights, and implements LodgingSavers and Casino Green PG&E. The implementer conducts the following:

- Marketing and Outreach,
- Engineering Assessment/Evaluation,
- Oversee measure installation,
- Reporting on project progress back to PG&E,

- Verification/QA: Once a contractor informs Ecology Action that a project has been completed, the implementer will visit each site to perform a quality assurance check to see if measures were installed to specification and if customers are satisfied,
- Incentives: Will pay the Program Contractor once verification is complete. The contractor bills each customer for the difference between the project cost and the incentive check, and will send a copy of the bill to the implementer, as part of the implementer's QA process,
- Collects customer feedback in survey: customers fill out an internal customer survey on GetFeedback, which asks about their experience with the specific contractor that performed the work and questions to ascertain ways to improve their internal process.

3.1.7 Furniture Store Energy Efficiency

Program Characteristics

IOU	PG&E, PGE210118
History	Continuing since 2010
Target market	Downstream: Vertical market expertise; Furniture stores
Measures offered	• Comprehensive lighting and controls retrofits, including fluorescent, LED, and occupancy sensors;
Services offered	Energy audit (lighting) Technical assistance Direct installation
Measure Impact Type	Deemed
Value/Why it originated	Energy savings in hard to reach markets
How it differs from Core	No or low upfront costs for lighting measure; customer does not have to hire contractor
Same Measures in Core	Yes
What is innovative	None, strategy to reach market
Fuel Focus	Electric

Delivery Overview

Implementer	Matrix Energy Services, Inc.
Delivery Model	Implementer recruits customer; Schedules audit; Performs site assessment; Obtains signatures on customer agreement form; Installs measures; Verifies correct installation; Follows-up with phone call by program staff or call center staff for feedback on program experience
Marketing approach	Direct: Mailings, telemarketing, door-to-door marketing including account representative ride-alongs
Coordination with Core	Yes
Coordination w/ Other Programs	No; Very limited to coordinate potential overlap. Matrix has right of first refusal if another implementer approaches them with a furniture store project
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Referrals, Co-marketing as part of “ride-alongs”
Customer Incentive	DI measure at no cost or low-cost co-pay
Implementer Incentive	Performance-based per kWh savings
Installation	In-house by Matrix staff
Audit type	Measure-specific (lighting)

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$2,421,660	7,232,952	1,628	-42,170
Actual (b)	$4,275,470	11,520,731	2,359	-66,141
% Goal achieved	177%	159%	145%	157%
Participants (c)	304			
Cost Effectiveness (d)	Net TRC: 1.39	Net PAC: 2.05		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls)..

Program Value

Marketing Approach

The implementer works directly with PG&E in tandem to market the program. They developed a process in the last two years whereby a Matrix Energy person teams up with a PG&E sales representative to go door to door to approach potential customers. During these "ride-alongs" with the PG&E rep, Matrix is able to perform the site assessment on the spot and the customer is able to talk to PG&E and listen about the programs they offer and even asking questions they may have about their own energy usage. This process has been wildly successful with both the Furniture Store and Private K-12 Schools Program. For the Furniture Program specifically, this approach works well as the stores are public businesses that the reps can walk in and out of freely.

> *Ever since I started working with these programs it was told to me either by internally or with our clients that we really like to work together to achieve these things. I appreciate that PG&E has that attitude. So we developed a process for teaming up one of our professionals with a sales rep from PG&E and going door to door to approach these customers. Not only are we able to perform an assessment during that time, the customer is getting the advantage of getting to meet with a local PG&E rep, hearing about this program and perhaps even asking questions that they have been meaning to ask or have not had the time to ask. So we started doing these things, the ride-alongs with the reps and that has been wildly successful with both of our programs. We told the leadership at PG&E about this approach and everyone's eyes get wide because I don't think this has ever been tried before. So for us it has been very successful. I am not sure if any other projects out there are trying it. – Program Implementation Staff*

The implementer also markets the program in-house. Matrix Energy will generally first send out cobranded mailers to customers. Some customers will call into Matrix based on that mailer alone. If Matrix does not hear from a customer in 2-3 days after sending the mailer, they will have their in-house, full-service call center follow up with the customer. Once the customer is on the phone, Matrix will explain the program to the customer, explain their relationship with PG&E, and attempt to schedule a visit with the customer. Matrix tries to install measures within 2-3 weeks of when recommendations are made. The entire turnaround for each customer is about 30 days.

PG&E representatives will also notify Matrix of customer leads, at which point Matrix will call the customer. PG&E representatives will contact a customer directly by phone too, if needed. The IOU mentioned that having a niche market is beneficial in some respects to help market the program. It makes it easier for IOU account representatives to organize campaigns with one implementer, and it is easy for the implementer to ask account reps to generate a list of all the furniture stores in a particular area.

> *…the whole niche aspect has been helpful in selling because the way some of the reps in some of the areas work is they are focused on schools or they focus on a particular customer type. So it is easier to do a campaign working with one implementer saying we are doing a marketing campaign in our area… say in Fresno focusing on furniture stores. So it is easy to coordinate with the Reps. They can generate lists of all the furniture stores in their area. They have the intelligence as to which customers have participated. So it is a good way to coordinate once to lock in a sale to turn it over to an implementer to do the whole thing. So those are the things that I think add value. – PG&E Program Management Staff*

Value/Filling a Need in the Marketplace

The program reaches a niche market, furniture stores, which are notoriously large spaces with a lot of lighting potential. These stores generally cover much more square footage than any other small/medium commercial space.

The turnkey portion of the program is unique from Core – the educational and recruiting component is critical to the program's success as is ease of participation brought on by having an implementer. Whereas with Core a customer would have to identify measures and then hire a contractor, with the 3P program customers are utilizing Matrix to handhold them throughout the entire process – from identifying the opportunity to installing the measures to assisting with the paperwork.

In terms of program recruitment, without the customer education component provided by Matrix, most customers would probably not know that these opportunities exist. Smaller businesses are often quite wary of sales calls that offer something free, so the teaming up with PG&E to canvass stores has really helped to market the program successfully.

> *There are some unique barriers with furniture stores. You are working with a small business and most small business… we work with small businesses all the way up to larger commercial chains, which operate more like a large university. There is more red tape etc. But with the smaller businesses you might call up the business and you are typically talking to the owner. These customers are getting calls left and right wanting to sell them something. You think selling a low to no cost program would be easy. Selling something "free" would not have as much of an undertaking. But because there are a lot of scams out there people are generally not interested in wanting to hear we have no cost program through your utility. They are like, "Yeah right!" So customer education has been a barrier for us. That kinds of leads me into the approach I was talking to you about. About how we teamed up with PG&E, a boots on the ground effort, to go door-to-door with these customers so they could see their PG&E Rep in the flesh with a badge and match with our program to explain that this really is a no cost or low cost program and this is why. You pay for this monthly. That is $2 to $3 on your bill to fund things like this. If you multiply that by all the customers in PG&E that is a lot of money. So when we show up in person we have had a lot of success. – Program Implementation Staff*

Coordination with Other Programs for Deeper Savings

The program will help with cross-program referrals as they arise, but does not coordinate with other programs for deeper savings. Furniture stores, private K-12 schools, grocery stores, and certain other types of businesses are contractually excluded from other LGP 3P contracts and those other 3P programs are not supposed to go after furniture store customers. Once in a while those other LGP 3P programs will have developed a relationships with a furniture store and want to do a project, but they are supposed to ask Matrix to give the first right of refusal before proceeding. Matrix has general let those 3P programs proceed with projects, if those implementers have developed good relationships with those customers – Matrix does not want to disrupt the flow of projects. .

> *I don't know if it is LGPs per say. But there are other 3P programs out there that have approached a FS base. What they are supposed to do is contact their PM who contacts ours to get either an "Okay" from us to do it since we have the first right of refusal. Or tell them Matrix would like to proceed with that customer. Generally we like to play nice. If they have already developed a relationship with the customer we don't want to disrupt any sort of process. – Program Implementation Staff*

Implementer Role

The implementer conducts the following:

- Marketing and Outreach,
- Coordination with LGPs,
- Engineering Assessment/Evaluation,
- In-House Project Installation,
- Payment of Customer Incentives,
- Verification/QA: Matrix will performed their own quality checks (PG&E will also inspect a percentage of projects monthly, prior to approving the implementer's invoice),
- Collects customer feedback via informal phone call by the call center; although sometimes the foreman who did the job will call.

3.1.8 LED Accelerator

Program Characteristics

IOU	PG&E, PGE210119
History	On-going since 2009 as 3P program, implementer offered measures through Core beforehand; program first focused on approving LEDs for Energy Star compliance, over time the program expanded for different LED types with varying lumen ranges and the program thus serves many repeat customers
Target market	Downstream: Horizontal market expertise; Large multi-site commercial with a focus on retail and grocery sectors who have many lights on 24/7; but also reach banks and medical offices
Measures offered	• All LED interior and exterior lighting fixtures and bulbs
Services offered	Audit and economic analysis Techncial assistance
Measure Impact Type	Custom
Value/Why it originated	Market transformation to develop and introduce high efficient LED lighting
How it differs from Core	Higher-tier LEDs, higher incentives than conventional LEDs available in Core;
Same Measures in Core	No
What is innovative	Implementer works with LED manufacturer to increase the saturation of innovative lighting products
Fuel Focus	Electric

Delivery Overview

Implementer	Energy Solutions
Delivery Model	Phone screening to identify scope of work, includingeconomic analysis Customers signs Access Agreemetn and Program Participation Agreement based on agreed upon Statement of Work Pre-install on-site audit and Pre-Installation Report PG&E approves Pre-Installation Report and reserves incentives Customer hires contractor for installation; Implementer performs post-install inspection and drafts a Post-Installation Report and a Revised Incentive Agreement Customers signs Revised Incentive Agreement and Permit Compliance PG&E approves the Revised Incentive Agreement Implementer pays incentive to customer
Marketing approach	Direct: Educational resources including case studies (brochures); website with information clearinghouse/database; outreach to industry associations, manufacturers, and distributors. Little marketing is needed as program has already established relationships and targets additional upgrades.
Coordination with Core	No
Coordination w/ Other Programs	No
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Contract management, Some referrals from ES&S; engineering review of custom projects

Customer Incentive	Rebate based on estimated energy savings
Implementer Incentive	Performance-based per energy savings installed
Installation	Outsourced: Customer hires the contractor they want
Audit type	Measure-specific

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$2,183,901	5,184,000	1,120	-125,581
Actual (b)	$5,290,646	11,715,535	2,534	-6,588
% Goal achieved	242%	226%	226%	5%
Participants (c)	236			
Cost Effectiveness (d)	Net TRC: 1.80	Net PAC: 1.25		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Marketing Approach and Reliance on Local Government Partnerships

The program does minimal marketing at this time. The program does not work with any Local Government Partnerships. The implementer has been doing similar program designs to this one in California for 25 years and as such has built strong relationships with many large commercial businesses throughout the State. Many participants are repeat customers who want to do more at the same location or at another location. Most participation comes from existing relationships with customers and some referrals come from PG&E's ES&S (Energy Solutions and Services) representatives.

Value/Filling a Need in the Marketplace

This program started in 2009 by approving LEDs for ENERGY STAR compliance. It started by targeting the top 20% of the LED market and attempted to transform the market's acceptance of this technology as high quality lighting that meets big retail needs. They wanted target big retail stores (e.g. Safeway and Walmart) so it could have a very large effect on market acceptance. The theory was that if more high quality LED products were installed, then the cost would come down due to higher demand. The newer LED products are expensive and many customers are hesitant to adopt them.

The program holds manufacturers to high standard, the efficacy of the lighting (lumens per watt) is very important to large retail customer adoption. The implementer works with manufacturers to differentiate the LED products for the customer (CRI, type of light, needs vary by customer). The implementer's role in this market is critical, given that manufacturers can release new LEDs every 9 months.

The program is focused on early adopters of new LED lighting technology. The implementer, Energy Solutions, has specific expertise in the LED lighting market and is particularly adept at working with lighting

manufacturers and customers to identify the right product for the customer and the right design. The implementer works with manufacturers to produce lighting products at higher standards, e.g. better warranty and lumen requirements, to best meet the needs of high volume commercial customers such as the Gap or a Grocery chain. The program encourages adoption of higher-tier LEDs (Core only offers ENERGY STAR LEDs) and can offer higher incentives for them than the Core program can. This program fills a need for large retail, grocery or other sectors such as museums who have very large lighting load and also have very unique requirements for lighting as the lighting is a crucial part of the customer's business, for example illuminating art in a museum or illuminating products for sale. In these applications, the businesses have very specific needs for the type and quality of the lighting as the lighting design directly impacts the customer experience and satisfaction. As such, these types of businesses need an expert in advanced lighting technology to help them navigate their options to ensure that the lighting retrofit aligns with their business needs.

The program revised its PIP in this program cycle to include a new construction pilot.

Coordination with Other Programs for Deeper Savings

This program does not coordinate with any other programs. CORE and this 3P program operate separately.

Implementer Role

The implementer does the following for a given customer:

- Screens potential participants to see if they qualify; the customer needs to meet a minimum kW requirement,
- Helps the customer perform an economic analysis of options,
- Conducts a pre-audit to collect baseline conditions and post-audit for post conditions (this is where all data is collected to meet the requirements for the custom engineering review process),
- Fills out the program application for the customer,
- Conducts all verification and trues up all paperwork requirements,
- Writes check to participant for their estimated rebate amount (the implementer is paid for performance and also reimbursed for amount they paid to the customer),
- Follows-up with customer after project is complete to discuss experience and any future planning for more measures.

3.1.9 Casino Green

Program Characteristics

IOU	PG&E, PGE210122
History	On-going since 2009 with two implementers: Ecology Action responsible for deemed projects, Nexant responsible for custom projects
Target market	Downstream: Vertical market expertise; Tribal casinos & other facilities on tribal land
Measures offered	• Lighting; • HVAC; • Refrigeration; • Retrocommissioning (RCx) • Motors; • Food service; • Controls; and • Hot water
Services offered	Energy audit Direct installation (some)
Measure Impact Type	Custom and Deemed
Value/Why it originated	Energy savings in hard to reach markets
How it differs from Core	No upfront costs to the customer
Same Measures in Core	Yes
What is innovative	Strategy to reach market. Use of Modified Lighting Calculator allows for quick adoption of new lighting technologies not possible through Deemed methodology. Allows for diverse contractor participation and focuses delivery on most cost effective specifications to achieve highest performance.
Fuel Focus	Electric and Gas

Delivery Overview

Implementer	Ecology Action (Nexant implements the custom portion of the program) †
Delivery Model	Site access agreement; Facility-wide audit including upgrade proposal; Contractor schedules appointment for installation and notifies Ecology Action upon completion; Post-installation inspection by Ecology Action upon which incentive is paid to contractor; Follow-up with customer survey
Marketing approach	Direct: Marketing focused on relationship-building with tribal councils; marketing materials
Coordination with Core	Yes
Coordination w/ Other Programs	No
Work with LGPs	Yes (Referrals)
Reliance on LGPs	No
IOU Support	Accounts reps, support from products team, technical team (reporting), engineering reviews, marketing collaboration, presentations at annual IOU Sales Forums and other events, One-off program trainings for ES&S staff

Customer Incentive	Incentive paid to contractor, customer co-pay if project costs exceed incentive amount
Implementer Incentive	Performance-based per energy savings installed
Installation	Program-vetted and non-program contractors
Audit type	Facility-wide, Comprehensive

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$2,219,365	4,886,061	1,500	67,306
Actual (b)	$2,103,560	6,980,158	690	-8,206
% Goal achieved	95%	143%	46%	-12%
Participants (c)	12			
Cost Effectiveness (d)	Net TRC: 2.18	Net PAC: 2.22		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

†Notably, this program has two implementers. The Evaluation Team was able to interview Ecology Action, who also implements RightLights and LodgingSavers. Ecology Action implements the direct install portion of the Casino Green Program while the other implementer, Nexant, implements the custom portion.

Program Value

Marketing Approach

Similar to RightLights and LodingSavers, Casino Green uses focused market-based campaigns to target customers. Since the tribal market is quite well defined – there are roughly 20 tribal casino owners (according to the implementer) in the territory – a more focused marketing approach is appropriate. Since 2009, for the first year and a half of the program, implementers focused their efforts purely on relationship building. At the time, not a lot of trust was built up between tribal casino owners and the utility, so Ecology Action sent two staff members to attend council meetings and events, and to get involved with organizations active with the target community. Over time, being present in the area, consistent face-to-face interaction, and communicating that Ecology Action is a nonprofit really helped them connect with tribal owners and build trust.

> *...in many ways for the DI component [Casino Green is the] same program as RightLights and LodgingSavers. The main difference is that this one did take very specific marketing because it is specifically for tribal casino owners. The program started in 2009 and for the first year and a half of the program did nothing but building relationships, going to council meetings, lots of trust building that was lacking in that community specific to relationships with the utility. So we helped build those relationships. We are now very well looped into all the tribal councils that make decisions about EE upgrades at those sites. So that is the main difference there. There are only about 20 casinos in the PG&E territory that we work with directly. So it is a very specific market too so it doesn't take broad marketing mailers and things like*

that. We know whom we need to talk to. We know whom we are targeting. So it is much more about maintaining relationships with facility staff. –Program Implementation Staff

Value/Filling a Need in the Marketplace

As a 3P nonprofit, Ecology Action is able to build trust with tribal casino owners more easily than if the program were directly run by an IOU, who must still earn profit and answer to shareholders. The benefit of operating as a mission-based not-for-profit organization has been beneficial to relationship building, and EA's work to date has made them a trusted and well-positioned resource for tribal owners looking to improve energy efficiency.

We are mission based. Our goal is greenhouse gas emissions reduction, trying to do the right thing for the planet. That goes a long ways when you can tell someone you are not here at the whim of a shareholder. I am here to do the right thing and I am not just trying to make an individual more profit at the end of the day. Everything we do, all the money we make goes back into allowing us to do this for more people in more places. [Working} as a non-profit really helps us go the distance there. It is much different than what a utility can bring to customers. –Program Implementation Staff

The other obvious benefit of the program is that it serves tribal customers, an underserved hard to reach market. The program name belies its full reach: while efforts do focus on the biggest drivers of energy usage on tribal lands – casinos – the program actually includes many types of relatively comprehensive retrofits. The program may serve other commercial properties (e.g., gas stations, restaurants, etc.) as long as they are on tribal lands.

Coordination with Other Programs for Deeper Savings

There is currently no coordination with other programs. The program offers all measures available through the IOU to achieve deep savings

Implementer Role

Ecology Action is the implementer. They also implement LodgingSavers and RightLights for PG&E. The implementer conducts the following:

- Marketing and Outreach,
- Engineering Assessment/Evaluation,
- Vets program and non-program contractors who do the majority of the installation,
- Verification/QA: Once a contractor informs Ecology Action that a project has been completed, the implementer will visit each site to perform a quality assurance check to see if measures were installed to specification and if customers are satisfied,
- Incentives: Will pay the program contractor once verification is complete. The contractor bills each customer for the difference between the project cost and the incentive check, and will send a copy of the bill to the implementer, as part of the implementer's QA process,

  Collects customer feedback in survey: customers fill out an internal customer survey on GetFeedback, which asks about their experience with the specific contractor that performed the work and questions to ascertain ways to improve their internal process.

3.1.10 Healthcare Energy Efficiency Program

Program Characteristics

IOU	PG&E, PGE210123
History	On-going since 2010; no major changes to program design but did not actively market the program during 2013-14 cycle upon PG&E's request
Target market	Downstream: Vertical market expertise; Independent medical facilities that are not part of Kaiser Permanente, Dignity Health, and Sutter Health (key difference to SCE's HEEP)
Measures offered	Retrofitting and Retrocommissioning (RCx) measures for: • Heating, ventilation and air conditioning (HVAC) • Boilers • Lighting and lighting controls • Motors, including air handlers and boiler fans • Chillers • Medical equipment • Food services, including variable-frequency drives (VFD) on hoods, refrigeration, ice machines and storage appliances • Laundry • Process motor retrofits (phased out early 2013)
Services offered	Energy audit Technical assistance
Measure Impact Type	Custom and Deemed
Value/Why it originated	Energy savings in hard to reach markets
How it differs from Core	Technical assistance, segment expertise to navigate the upgrade process, OSHPD review and secondary review
Same Measures in Core	Yes
What is innovative	None, strategy to reach market
Fuel Focus	Electric and Gas

Delivery Overview

Implementer	Willdan
Delivery Model	Customer signs site-access agreement; Initial facility audit provides savings opportunities to customers; Customer selects measure mix and implementer conducts comprehensive audit; Customer commits to measures in program participation agreement; Implementer submits comprehensive audit report to PG&E for technical review and approval; Customer hires contractors for installation; Implementer verifies installation and pays out incentive
Marketing approach	Direct: Leverage implementer and account representative relationships, no active marketing otherwise
Coordination with Core	No
Coordination w/ Other Programs	No
Work with LGPs	No

Reliance on LGPs	No
IOU Support	Referrals from Account Representatives
Customer Incentive	Rebate based on deemed and custom measure savings
Implementer Incentive	Performance-based per estimated energy savings paid in 2 milestones
Installation	Contractor
Audit type	Preliminary facility-wide (often ASHRAE 2) and comprehensive measure-specific follow-up

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$2,536,474	6,247,800	968	90,000
Actual (b)	$2,637,016	1,913,548	169	262,027
% Goal achieved	104%	31%	17%	291%
Participants (c)	7			
Cost Effectiveness (d)	Net TRC: 0.57	Net PAC: 0.65		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

PG&E's Healthcare Energy Efficiency Program (HEEP) is designed to gather gas savings from customers in independent healthcare facilities who typically lack financial resources to pursue energy efficient upgrades on their own. HEEP helps overcome this barrier by offering no-cost facility audits and technical assistance to guide customers through the upgrade process. The incentive for energy efficiency upgrades is also important as hospitals prioritize budget expenses related to medical service and patience comfort.

The program implementer, Willdan, has extensive experience with energy efficiency upgrades in the healthcare industry, and runs SCE's and SDG&E's 3P healthcare programs since 2010. Sector-experience is particularly important for healthcare programs as many retrofits are subject to review and approval from the California's Office of Statewide Health Planning and Development (OSHPD), which adds an additional layer of complexity to project implementation.

Marketing Approach and Reliance on Local Government Partnerships

The implementer, PG&E's account representatives and contractors identify potential program participants. To market the program, Willdan leverages existing relationships with the senior management of facilities that participated in other IOU service territories, or with facility directors who received other engineering services from Willdan. The implementer works closely with the account representatives before reaching out to customers, and invites them to kick-off meetings to introduce the program.

> *We don't typically do a lot of marketing …as far as sending out flyers or mail pieces. It is more of working through our relationships, the Account Execs and engaging contractors that work in these facilities as well to educate them on the program and show them the benefits of working through the program and how it can help with the cost.*
> Implementation Staff

The program does not coordinate with Local Government Partnerships.

Coordination with Other Programs

This program does not coordinate with Core or other 3P programs.

Implementer Role

Willdan is the implementer for PG&E's, SCE's and SDG&E's Healthcare Energy Efficiency Programs.

For this program, Willdan establishes the savings goals based previous performance and the existing project pipeline. In addition, the implementer conducts the following:

- Marketing
- Facility audit (typically ASHRAE level 2, collection of trend data if needed)
- Technical assistance to develop RFPs, hire contractors, liaise with contractors
- Verification/QA: Analysis of post installation trend data, data loggers
- Incentive payment to customer or contractor

3.1.11 K-12 Private Schools and Colleges Audit Retro

Program Characteristics

IOU	PG&E, PGE210126
History	Continuing since 2010, program launched in conjunction with Furniture Store EE and Entertainment Centers program
Target market	Downstream: Vertical market expertise; Private pre-schools and K-12 schools, private colleges and universities, and trade/technical schools (5000 to 1M sqf)
Measures offered	• Comprehensive lighting and controls retrofits (T8, T12, CFLs), including fluorescent, LED, bi-level fixtures, occupancy sensors, and timeclocks; • Exterior lighting and controls.
Services offered	Energy audit Technical assistance Direct installation
Measure Impact Type	Deemed
Value/Why it originated	Energy savings in hard to reach markets
How it differs from Core	No or low upfront costs for lighting measure; customer does not have to hire contractor
Same Measures in Core	Yes
What is innovative	None, strategy to reach market
Fuel Focus	Electric

Delivery Overview

Implementer	Matrix Energy Services, Inc.
Delivery Model	Implementer Recruits Customer; Schedules Audit; Performs Site Assessment; Obtains Signatures on Customer Agreement Form; Installs Measures; Verifies Correct Installation; Follows-Up with Phone Call by Program Staff or Call Center Staff for Feedback on Program Experience
Marketing approach	Direct: Mailings, telemarketing, door-to-door marketing including account representative ride-alongs
Coordination with Core	Yes, ES&S rep conducts ride-along and informs customer of program offerings while implementer conducts energy audit
Coordination w/ Other Programs	Yes, ES&S rep can inform customer of OBF. Matrix has right of first refusal if another implementer approaches them with a furniture store project
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Referrals, Co-marketing as part of “ride-alongs”
Customer Incentive	DI measure at no cost or low-cost co-pay
Implementer Incentive	Performance-based per kWh savings
Installation	In-house by Matrix staff
Audit type	Measure-specific (lighting)

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$1,695,312	4,075,921	1,030	-54,824
Actual (b)	$1,884,843	3,777,677	349	-30,926
% Goal achieved	111%	93%	34%	56%
Participants (c)	83			
Cost Effectiveness (d)	Net TRC: 1.24	Net PAC: 1.79		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Marketing Approach

The implementer works directly in tandem with PG&E to market the program. They developed a process in the last two years whereby a Matrix Energy person teams up with a PG&E sales representative and to go door to door to approach potential customers. During these "ride-alongs" with the PG&E rep, Matrix is able to perform the site assessment on the spot and the customer is able to talk to PG&E and listen about the programs they offer and even ask questions they may have about their own energy usage. This process has been wildly successful with the Private K-12 Schools Program. For the Private K-12 Schools Program specifically, because these are private schools (and not a business open to the public), the implementer will generally call ahead of time to ask to schedule a visit. With some larger, more bureaucratic schools, Matrix often has to go through a more formal process to obtain a site visit.

> *Ever since I started working with these programs it was told to me either by internally or with our clients that we really like to work together to achieve these things. I appreciate that PG&E has that attitude. So we developed a process for teaming up one of our professionals with a sales rep from PG&E and going door to door to approach these customers. Not only are we able to perform an assessment during that time, the customer is getting the advantage of getting to meet with a local PG&E rep, hearing about this program and perhaps even asking questions that they have been meaning to ask or have not had the time to ask. So we started doing these things, the ride-alongs with the reps and that has been wildly successful with both of our programs. We told the leadership at PG&E about this approach and everyone's eyes get wide because I don't think this has ever been tried before. So for us it has been very successful. I am not sure if any other projects out there are trying it. – Program Implementation Staff*

The implementer also markets the program in-house. Matrix Energy will generally first send out cobranded mailers to customers. Some customers will call into Matrix based on that mailer alone. If Matrix does not hear from a customer in 2-3 days after sending the mailer, they will have their in-house, full-service call center follow up with the customer. Once the customer is on the phone, Matrix will explain the program to the customer, explain their relationship with PG&E, and attempt to schedule a visit with the customer. Matrix tries to install measures within 2-3 weeks of when recommendations are made. The entire turnaround for each customer is about 30 days.

PG&E representatives will also notify Matrix of customer leads, at which point Matrix will call the customer. PG&E representatives will contact a customer directly by phone too, if needed. The IOU mentioned that having a niche market is beneficial in some respects to help market the program. It makes it easier for IOU account representatives to organize campaigns with one implementer, and it is easy for the implementer to ask account reps to generate a list of all the private K-12 stores in a particular area.

Value/Filling a Need in the Marketplace

The program reaches a niche market, private K-12 schools, which were thought to have good opportunities for lighting and HVAC measures. The niche component helps with marketing the program because when you go to customer site you can exhibit your specialty in their particular area. The IOU already had several public K-12 school programs, so it made sense to also have a private school one as well.

The turnkey portion of the program is unique from Core – the educational and recruiting component is critical to the program's success as is ease of participation brought on by having an implementer. Whereas with Core a customer would have to identify measures and then hire a contractor, with the 3P program customers are utilizing Matrix to handhold them throughout the entire process – from identifying the opportunity to installing the measures to assisting with the paperwork.

Coordination with Other Programs for Deeper Savings

The program does cross-program referrals and will help facilitate PG&E's on-bill financing program, if a customer needs it.

> *We try to get the project turned around as quickly as possible. Lighting is going to be the biggest energy sucker for them. So that is what we are focusing on. We do like to integrate with other programs and let them know there might be other energy saving opportunities out there. We encourage them and we do put them in touch with their local area rep so they can have access to those kinds of things. –Program Implementation Staff*

The program does not coordinate with LGPs. There is no public funding available to private schools. If there were, the program would have to deal with issues related to Prop 39. The only way Matrix might deal with another 3P program is with cross-program referrals. With the schools program, since Matrix only focuses on key lighting measures they will refer the school to their PG&E account representative in order to pursue other possible measures such as for EMS or reflective window tint. The implementer reports that they work heavily with PG&E to get these customers in touch with who they need.

Implementer Role

The implementer conducts the following:

- Marketing and Outreach,
- Coordination with LGPs,
- Engineering Assessment/Evaluation,
- In-House Project Installation,
- Payment of Customer Incentives,
- Verification/QA: Matrix will performed their own quality checks (PG&E will also inspect a percentage of projects monthly, prior to approving the implementer's invoice),

- Collects customer feedback via informal phone call by the call center; although sometimes the foreman who did the job will call.

3.1.12 Enovity SMART (School & Municipal Advanced Retrocommissioning & Tune-Up)

Program Characteristics

IOU	PG&E, PGE210128
History	Originated in 2013 under IDEEA365 umbrella; implementer conducted whole building analysis and analytics for PG&E prior to 3P program; increased target market from 50K sf to 100K sf; extension until June 2015 when PG&E will choose one implementer for an analytics enabled retro-commissioning program
Target market	Downstream: Vertical market expertise; Schools and municipal facilities with less than 100,000 sf who have electric interval in select counties
Measures offered	• Various Retrocommissioning measures, most commonly HVAC and lighting controls
Services offered	Remote analytics Technical assistance Direct installation Monthly engagement
Measure Impact Type	Custom
Value/Why it originated	Proof-of-concept that analytics can identify energy efficiency opportunities in smaller facilities
How it differs from Core	Analytics-enabled assessment to identify and engage prospective customers; Core targets large facilities above 100K sf; faster than Core; direct installation of RCx upgrades by implementer; monthly engagement opportunities
Same Measures in Core	Yes
What is innovative	Proof-of-concept to use data analytics to identify Retrocommissioning opportunities in smaller faclitites
Fuel Focus	Electric and Gas

Delivery Overview

Implementer	Enovity
Delivery Model	Portfolio-wide assessment of EE potential to identify best sites; Web-based site assessment provides list of upgrade opportunities (Gridium energy analytics tool) to account representative; Account representative schedules meeting with customer to present savings opportunities; External review of calculations by external party (AESC); Direct installation of no- and low cost measures by Enovity, then energy projects report outlining additional opportunities; Six-month access to Drift Reports from Gridium's energy analytics tool
Marketing approach	Direct: Leverage existing relationships, PG&E account representatives; attend segment-focused events
Coordination with Core	No, Core serves larger facilities (100k sf or greater) while the 3P program serves customers below this threshold
Coordination w/ Other Programs	Some, there is overlap with other programs targeting school customers, which requires some coordination and understanding about program boundaries.
Work with LGPs	Yes

Reliance on LGPs	Does not rely on LGPs for referrals, but coordination described as critical as various stakeholders serve the school segment
IOU Support	Smart meter data; Account Representative for customer engagement and referrals; review of savings calculations using CBOA tool (ASC group);
Customer Incentive	Rebate based on energy savings
Implementer Incentive	Performance-based per installed energy savings
Installation	In-house by Enovity (or Enovity-hired contractors) for low cost measures, customer install for capital intensive projects
Audit type	Virtual energy audit /remote usage analytics with on-site walk-thru to validate assumptions

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$1,894,532	0	0	0
Actual (b)	$845,743	1,213,902	54	79,369
% Goal achieved	45%	N/A	N/A	N/A
Participants (c)	18			
Cost Effectiveness (d)	Net TRC: 1.46	Net PAC: 1.15		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

The Enovity Smart program originated under IDEEA365 solicitations as one of four programs offering analytics enabled Retrocommissioning (AERCx). The program is designed to test the concept of using data-driven remote building assessments to identify energy savings from Retrocommissioning (RCx) in smaller facilities. Facilities with less than 100,000 square feet are currently not served by PG&E's Core RCx program, as most projects would not be cost effective under standard EM&V procedures that require on-site audits. The program targets schools and municipal facilities with less than 100,000 sf in the counties of Alameda and San Mateo. Schools typically lack the funds and personnel to pursue energy efficiency upgrades. As such, the program functions as a proof-of-concept and generates energy savings in hard-to-reach markets.

The implementer has prior experience in conducting remote whole-building analysis with analytics and uses Gridium as a software tool to identify Retrocommissioning opportunities. In comparison to other AERCx programs, Enovity implements select repair and optimization measures in-house with its own technical staff[30]. Customers can therefore achieve energy savings without capital investments or major time commitments from school's operations and maintenance staff. The program further offers continuous monitoring of building performance and monthly tune-ups for program participants, which has helped resource-restricted schools to

[30] This includes no-cost or low cost energy measures such as equipment scheduling or control sequence changes

pursue deeper retrofits. In comparison to Core, the 3P program is very good at deriving leads and at implementing quickly. Once customers sign the program contract Enovity will implement as early as that same week.

Marketing Approach and Reliance on Local Government Partnerships

Enovity Smart uses data analytics to identify facilities with high savings potential and coordinates with PG&E Account Representatives, Local Government Partnerships, and other school programs before approaching a prospective participant. The implementer described coordination as critical in the school segment to avoid targeting the same customer and to create additional project opportunities through existing relationships with the customer.

> *As soon as you get into the segment you become acutely aware of exactly how many stakeholders are trying to serve this segment… If you want to be successful you have to communicate and coordinate. It is all about relationship building. It is all about working together [in] the customer's best interest. Clearly communicating how your program works compared to the other programs … we are not just working well together, they are giving us leads… So it is all about relationships. – Program* Implementation Staff

Coordination with Other Programs

Coordination between Enovity Smart and PG&E's Core program is generally not necessary as the 3P program caters to smaller facilities with projects that are not considered as cost-effective under Core. However, Enovity staff coordinate with other energy efficiency programs in the school sector to prevent offering measures that might already be offered elsewhere, and to identify additional project leads. PG&E facilitates group meetings to support these coordination efforts.

> *PG&E recognized that there was a lot of overlapping stakeholders in this and they offered a forum, a clearinghouse of the different stakeholders serving schools around Prop 39 and all the PG&E folks that are doing programs. There are big group meetings. And that was actually pretty helpful. It got everyone to connect and coordinate.* - Implementation Staff

Implementer Role

The implementer offers Enovity SMART in the counties of Alameda and San Mateo as other AERCx programs serve other counties in PG&E's service territory. While there are no planned changes to the implementer's role, PG&E is using the 2013-14 program cycle to test different delivery models and envisages to work with one program implementer as of 2016.

The implementer conducts the following:

- Portfolio-wide assessment of EE potential and web-based site assessment using smart meter data,
- Stakeholder engagement,
- Technical assistance,
- Implementation of Retrocommissioning upgrades by Enovity technicians or Enovity-hired contractors,
- Provides energy report with additional savings opportunities to the customer,

Monthly monitoring and follow-up upgrades upon request.

3.1.13 Nexant AERCx (Technology Enhanced Retrocommissioning)

Program Characteristics

IOU	PG&E, PGE210129
History	Originated in 2013 under IDEEA365 umbrella; extended target market from facility size of 50K sf to 100K sf; program extended until June 2015
Target market	Downstream: Vertical sector expertise; schools and municipal facilities with electric interval meter and central building automation system in 7 counties
Measures offered	• Several Retrocommissioning measures for system optimization, most commonly HVAC and lighting controls
Services offered	Remote analytics Technical assistance
Measure Impact Type	Custom
Value/Why it originated	Proof-of-concept that analytics can identify energy efficiency opportunities in smaller facilities
How it differs from Core	Analytics-enabled assessment to identify and engage prospective customers; faster than Core; Core targets large facilities above 100K sf
Same Measures in Core	Yes
What is innovative	Proof-of-concept to use data analytics to identify Retrocommissioning opportunities in smaller faclitites
Fuel Focus	Electric and gas

Delivery Overview

Implementer	Nexant
Delivery Model	Portfolio-wide assessment of EE potential to identify prospective customers using FirstFuel analytics tool; Outreach to customer through Account Representative to present savings and sign Incentive Application and Access Agreement; Nexant completes remote building assessment using First Fuels' Remote Building Analytics software and provides a report with recommendations to the customer; Site visit by Nexant technician or contractor to verify suitability of selected measures and identify other potential measures (Project Participation Agreement); Customer hires RCx provider (own contractor or pool of program-vetted contractors) to implement measures based on Nexant's work orders; Verification based on pre and post documents (images, invoice); percentage of projects selected for pre and post trending in order to validate savings claims; Remote post installation monitoring for 6 months; Customer feedback voluntary as part of final project documents
Marketing approach	Direct: Leverage existing relationships, PG&E account representatives; attend segment-focused events
Coordination with Core	Yes, referrals to Core if identified measures are not available through 3P, referrals to Demand Response program
Coordination w/ Other Programs	Some, there is overlap with other programs targeting school customers, which requires some coordination and understanding about program boundaries.
Work with LGPs	Yes
Reliance on LGPs	Yes, referrals from LGPs while data was unavailable, contact LGPs if identified measure cannot be provided by program

IOU Support	Smart meter data; Account Representative for customer engagement and referrals; post installation verification report and calculations (ASC group); post installation review (TPS)
Customer Incentive	Nexant pays the RCx provider. Rebate based on energy savings, may cover up to 100% of project costs
Implementer Incentive	Performance-based per installed energy savings
Installation	Contractors hired by customers
Audit type	Virtual energy audit, measure-specific if needed

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$1,901,780	0	0	0
Actual (b)	$311,641	N/A	N/A	N/A
% Goal achieved	16%	N/A	N/A	N/A
Participants (c)	N/A			
Cost Effectiveness (d)	Net TRC: N/A	Net PAC: N/A		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) No energy savings data available in CPUC Program Database covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records. No claim records available in the CPUC Program Database.
(d) No data on Total Resource Costs and Program Administration Costs available for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

The Nexant AERCx program originated under IDEEA365 solicitations as one of four programs offering analytics enabled Retrocommissioning (AERCx). The program is designed to test the concept of using data-driven remote building assessments to identify energy savings from Retrocommissioning (RCx) in smaller facilities. Facilities with less than 100,000 square foot are currently not served by PG&E's Core RCx program as most projects would not be cost effective under standard EM&V procedures that require on-site audits. The program targets schools and municipal facilities with less than 100,000 sf in seven counties[31] of PG&E's service territory. Schools typically lack the funds and personnel to identify and pursue energy efficiency upgrades. As such, the program functions as a proof-of-concept and generates energy savings in hard-to-reach markets.

> *These customers really need our help. They don't know where to find EE measures. They don't have the funding… They are customers that have been underserved in the past. – Program Implementation Staff*

[31] Contra Costa, El Dorado, Glenn, Sacramento, San Joaquin, Stanislaus, Sutter, Yolo. This encompasses the school districts of Chico, Stockton and Lodi.

The implementer, Nexant, works with several analytic software providers throughout the U.S., and chose First Fuel's software for remote building assessments. The software generates client-ready reports that do not require many edits by the implementer. In comparison to Enovity Smart, Nexant outsources the implementation of RCx measures to specialized providers.Depending on energy savings, incentive can cover 100% of project costs. .

Marketing Approach and Reliance on Local Government Partnerships

Nexant analyzes smart meter data to identify facilities with high savings potential, but also liaises with account representatives and other stakeholders where data is unavailable. Upon program inception, the implementer held various meetings with Local Government Partnerships to explain the program and learn how the program can support LGP offerings. Given various issues surrounding the provision of data in early program stages, coordination with Local Government Partnerships was instrumental to identify and reach out to prospective participants. Nevertheless, coordination with LGPs remains important as it allows both the Nexant AERCx program and LGPs to leverage project opportunities. For example, the implementer has referred customers to the LGP when identified measures could not be covered in the 3P program, or if the a customers was ineligible for the AERCx programs for other reasons.

Coordination with Other Programs

Nexant's remote building assessment in combination with site visits enable the program to identify energy savings opportunities beyond Retrocommissioning measures. In cases where identified measures are not covered by Nexant's AERCx program, the implementer refers customers to PG&E's Core program. The implementer has also coordinated with PG&E's demand response program in the past. In addition, the program conducts outreach to contractors who may install upgrades in other programs and may hear about projects opportunities from them.

Implementer Role

The implementer offers Nexant AERCx in seven counties that include three school districts. There are no planned changes to the implementer's role, however, PG&E uses the 2013-14 program cycle to test different delivery models and envisages to work with one program implementer as of 2016.

The implementer conducts the following:

- Portfolio-wide assessment of EE potential and web-based site assessment using smart meter data
- Stakeholder engagement
- Provides energy report with upgrade recommendations to the customer
- Site visit to review RCx recommendations and identify additional savings opportunities
- Remote post installation monitoring for six month to keep track of building performance

In addition to the above, the implementer established the savings targets for this program.

3.1.14 RSG AERCx (Analytics Enabled Retrocommissioning)

Program Characteristics

IOU	PG&E, PGE210130
History	Originated in July 2013 under IDEEA365 umbrella;;extended target market to include facilities up to 100,000 sf (up from 50,000 sf); program extended until June 2015
Target market	Downstream: Vertical sector expertise; schools and municipal facilities under 100,000 sf with electric interval meter and central building automation system in select counties
Measures offered	• Several Retrocommissioning measures for system optimization, most commonly HVAC controls
Services offered	Remote analytics of smart-meter interval data using Agilis Energy (schools) and First Fuel (government agencies) Technical assistance
Measure Impact Type	Custom
Value/Why it originated	Proof-of-concept that analytics can identify energy efficiency opportunities in smaller facilities; implementer combines experience with analytics and school programs
How it differs from Core	Analytics-enabled assessment to identify and engage prospective customers; faster than Core; Core targets large facilities above 100K sf
Same Measures in Core	Yes
What is innovative	Proof-of-concept to use data analytics to identify Retrocommissioning opportunities in smaller faclitites
Fuel Focus	Electric and gas

Delivery Overview

Implementer	CLEAResult
Delivery Model	Portfolio-wide assessment of EE potential to identify prospective customers using Agilis and FirstFuel analytics tools; Outreach to customer through account representative to present savings opportunities identified through remote analytics; RCx upgrades completed by facility-staff or contractors; Verification using interval data and images of EMS
Marketing approach	Direct: Leverage existing relationships, RSG Schools Outreach Team surveys, PG&E account representatives; attend segment-focused events
Coordination with Core	Yes, referrals to Core if identified measures are not available through 3P. Account rep involved in kick-off meeting who refers customers as necessary
Coordination w/ Other Programs	Yes, referrals to OBF, coordinate with other programs targeting school customers
Work with LGPs	Yes
Reliance on LGPs	No
IOU Support	Smart meter data; Account Representative for customer engagement and referrals; post installation savings review (ASC group);
Customer Incentive	Rebate based on installed savings
Implementer Incentive	Performance-based per installed energy savings
Installation	Mixed, by contractor or facility-staff
Audit type	Virtual energy audit, measure-specific audit

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$1,566,797	0	0	0
Actual (b)	$454,016	N/A	N/A	N/A
% Goal achieved	29%	N/A	N/A	N/A
Participants (c)	N/A			
Cost Effectiveness (d)	Net TRC: 0.64	Net PAC: 0.65		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) No energy savings data available in CPUC Program Database covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records. No data available in the CPUC Program Database
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

The RSG AERCx program originated under IDEEA365 solicitations as one of four programs offering analytics enabled Retrocommissioning (AERCx). The program is designed to test the concept of using data-driven remote building assessments to identify energy savings from Retrocommissioning (RCx) in smaller facilities. Facilities with less than 100,000 square foot are currently not served by PG&E's Core RCx program as most projects would not be cost effective under standard EM&V procedures that require on-site audits. The program targets schools and municipal facilities with less than 100,000 sf in 21 counties[32] of PG&E's service territory. Schools typically lack funds and personnel to identify and pursue energy efficiency upgrades. As such, the program functions as a proof-of-concept and generates energy savings in hard-to-reach markets.

The implementer, CLEAResult, is also managing PG&E's 3P School Energy Efficiency Program and is therefore experienced with retrofits in the school sector. CLEAResult works with two analytic software providers, Adulous Energy and First Fuel[33], to test whether customer-focused product (Adulous) or a more detailed engineering decision analysis support tool (First Fuel) works better for remote assessments of small facilities. This program leans on school's facility staff or external RCx or EMS contractors to perform the program upgrades. The customer carries the costs if an external contractor is hired, which is different from Enovity Smart (where work is done by the implementer at no costs) and Nexant where the implementer channels PG&E's incentives directly to the contractor.

[32] Butte, Fresno, Kern, Kings, Lake, Madera, Marin, Mendocino, Merced, Monterey, Napa, Nevada, Placer, Santa Barbara, Santa Clara, Santa Cruz, San Luis Obispo, Shasta, Solano, Sonoma, Yuba

[33] Adulous Energy is used to analyze school buildings, and First Fuel is used for municipal facilities.

From the implementer's perspective, the opportunities related to data analytics are the key strengths of the program. Smart meter data allows the program to quickly identify irregularities in school's energy usage and enables the implementer to operate on a larger scale as various sites are examined without human resources.

> *In a traditional model we would perhaps do a phone survey first and learn a little bit about on a high level what is running. Where their pain points are, what equipment they are running, what level of EE have they done in the past with lighting etc? … Now we can look at 130 buildings within the district and have some sense of what is going on before we even meet them….you can discern quite a lot with a customer that has a regular schedule. The schools have a predictable schedule. So that allows us to pick out what look anomalous. – Program Implementation Staff*

Marketing Approach and Reliance on Local Government Partnerships

The PG&E Account Representatives play an important role in program marketing and outreach. Although CLEAResult can leverage existing relationships with schools from implementing the School Energy Efficiency Program, program implementation staff work closely with PG&E's Account Representatives to identify and reach out to suitable candidates for the program. The program also coordinates with Local Government Partnerships, but does not rely on them for program leads.

> *[Account representatives] are a guide for us in terms of knowing where various customer are in terms of readiness for implementing EE programs. they may know that these guys are already working with a large ESCO, [if] they are already being served by somebody else or … are perhaps doing some major construction work in which case you want to hold off [with] RCx. So the PG&E account reps help us navigate that process of thinking through good candidates to introduce the program. – Program Implementation Staff*

The kick-off meeting between the prospective participant, PG&E's account representative and the implementer is the main channel to foster buy-in from the customer. During this meeting, the implementer presents first findings form the remote building analysis and provides an overview of general program processes and incentives.

> *We will pull up a few sample buildings from the county and say here is what we are seeing remotely. There is always a story to be told about these buildings … We will start with a few sites that are performing cleanly and then a few sites that may be performing less cleanly where there is opportunity… [we explain if] you can get the middle school to look like that elementary school then perhaps you can save about this much energy. – Program Implementation Staff*

Coordination with Other Programs

During the initial outreach process and kick-off meeting, PG&E's Account Representatives helps customers understand how the AERCx program fits with PG&E Core offerings, other 3P programs or local Energy Watch partnerships, and refer customers accordingly.

Implementer Role

The implementer offers RSG AERCx in 21 counties as other AERCx programs serve other counties in PG&E's service territory. There are no planned changes to the implementer's role, however, PG&E uses the 2013-14 program cycle to test different delivery models and envisages to work with one program implementer as of 2016.

The implementer conducts the following:

- Portfolio-wide assessment of EE potential and web-based site assessment using smart meter data
- Stakeholder engagement
- Provides energy report with upgrade recommendations to the customer
- Site visit to review RCx recommendations and examine unknown loads if deemed necessary
- Remote post installation monitoring for six months to keep track of building performance

3.1.15 PECI AERCx (Analytics Enabled Retrocommissioning)

Program Characteristics

IOU	PG&E, PGE210131
History	Originated in November 2013 under IDEEA365 umbrella, began work in 2014; extended target market to include facilities up to 100,000 sf (up from 75,000 sf); program extended until December 2015
Target market	Downstream: Vertical sector expertise; state government buildings, state universities, grocers,small commercial office spaces, facilities defined as "professional, scientific, and technical services" under 100,000 sf with electric interval meter and central building automation system
Measures offered	• Retrocommissioning measures and lighting retrofits
Services offered	Remote analytics of smart-meter interval data using Retroficiency analytics tool Technical assistance; Post installation monitoring using Pulse E (EnerNOC) software
Measure Impact Type	Custom RCx and deemed lighitng
Value/Why it originated	Proof-of-concept that analytics can identify energy efficiency opportunities in smaller facilities
How it differs from Core	Analytics-enabled assessment to identify and engage prospective customers; faster than Core; Core targets large facilities above 100K sf
Same Measures in Core	Yes
What is innovative	Proof-of-concept to use data analytics to identify Retrocommissioning opportunities in smaller faclitites
Fuel Focus	Electric and gas

Delivery Overview

Implementer	CLEAResult (Previously: Portland Energy Conservation Inc. - PECI)
Delivery Model	Portfolio-wide assessment of EE potential to identify prospective customers using Retroficiency analytics provider and internal data analytics; Remote building assessment using Retroficiency software; Meeting with prospective customer; Customer commits to complete measures with one-year payback; On-site facility audit to produce assessment report; Review identified measures with customer; customer signs incentive agreement; Installation by customer's contractor or facility-staff (kick-off meeting and periodic check-ins between implementer and contractor); Verification using trend data and images; Post-installation monitoring using Pulse Energy (EnerNOC) to track persistence of savings
Marketing approach	Direct: Leverage existing relationships, PG&E account representatives; attend segment-focused events
Coordination with Core	No
Coordination w/ Other Programs	Some, to coordinate with other AERCx programs
Work with LGPs	Yes
Reliance on LGPs	Yes, leverage LGPs for referrals and outreach

IOU Support	Smart meter data; Account Representative for customer engagement and referrals; post installation savings review (AESC group);
Customer Incentive	Rebate based on installed savings paid by implementer
Implementer Incentive	Performance-based per installed energy savings
Installation	Facility-staff
Audit type	Virtual energy audit and facility-wide (1-2 days)

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$943,414	0	0	0
Actual (b)	$432,523	N/A	N/A	N/A
% Goal achieved	46%	N/A	N/A	N/A
Participants (c)	N/A			
Cost Effectiveness (d)	Net TRC: N/A	Net PAC: N/A		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) No energy savings data available in CPUC Program Database covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records. No claim records available in the CPUC Program Database.
(d) No data on Total Resource Costs and Program Administration Costs available for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

The PECI AERCx program originated under IDEEA365 solicitations as one of four programs offering analytics enabled Retrocommissioning (AERCx). The program is designed to test the concept of using data-driven remote building assessments to identify energy savings from Retrocommissioning (RCx) in smaller facilities. Facilities with less than 100,000 square foot are currently not served by PG&E's Core RCx program as most projects would not be cost effective under standard EM&V procedures that require on-site audits. In comparison to PG&E's other AERCx programs, PECI's primary target market are government facilities. In addition, the program serves commercial office buildings, universities, and grocery stores.

The implementer has extensive experience with Retrocommissioning. PECI, now CLEAResult, has administered RCx programs in California since 2004, and started using data analytics for remote savings assessments with the inception of this program. The implementer identifies buildings with high savings potential using Retroficiency software. The tool generates a detailed report, which is typically summarized for first interactions with the customer but provided in full upon request. In comparison to other AERCx programs, PECI leans on facility staff and contractors to complete RCx upgrades. The program uses Pulse Energy[34] software to monitor

[34] Acquired by Enernoc

building performance post installation and provides the customer with access to an online dashboard to track energy savings.

The key value proposition of the program is the remote energy assessment, which is free to the customer and avoids any interruptions in building operations.

Marketing Approach and Reliance on Local Government Partnerships

The program implementer analyzes smart meter data to identify facilities with high savings potential, but works closely with PG&E's Account Representative and ES&S staff to reach out to potential program participants. Given the primary target market are government facilities, the program also leverages Local Government Partnerships for program leads.

Coordination with Other Programs

During the initial outreach process and kick-off meeting, PG&E's Account Representatives helps customers understand how the AERCx program fits with PG&E Core offerings, other 3P programs or local Energy Watch partnerships, and refer customers accordingly.

Implementer Role

CLEAResult offers AERCx across PG&E's service territory. There are no planned changes to the implementer's role, however, legacy PECI and legacy RSG AERCx programs will be merged into one contract with CLEAResult.

The implementer conducts the following:

- Portfolio-wide assessment of EE potential and web-based site assessment using smart meter data,
- Stakeholder engagement,
- Provides energy report with upgrade recommendations to the customer,
- Site visit to review RCx recommendations and examine unknown loads if deemed necessary,
- Verification,
- Remote post installation monitoring for six month to keep track of building performance.

3.1.16 Lincus WISE (Water Infrastructure and System Efficiency)

Program Characteristics

IOU	PG&E, PGE210135
History	Originated in February 2014 under the IDEEA365 solicitations
Target market	Downstream: Vertical market expertise; Water and wastewater agency, special district, city-owned and miscellaneous other water and wastewater systems.
Measures offered	• Water Agency Data Analysis Report • Pump efficiency upgrades • Retrocommissioning (RCx) / water and wastewater system optimization
Services offered	Energy audit Technical assistance Business support Benchmarking Verification
Measure Impact Type	Custom and Deemed
Value/Why it originated	Comprehensive Energy savings in hard to reach markets
How it differs from Core	Deeper savings from Retrocommissioning and customer education; more comprehensive look at water and wastewater systems to maximize savings
Same Measures in Core	Some (Pump testing and overhaul through Advanced Pumping Efficiency Program)
What is innovative	Strategy to reach a new niche market to enable long-term comprehensive system efficiency improvements in water and wastewater systems,;Some interaction with pump manufacturers; Program works with large design engineering firms to help customers understand the impact of their maximum-capacity based designs. WISE targets.
Fuel Focus	Electric and Gas

Delivery Overview

Implementer	Lincus
Delivery Model	Assessment of available customer energy and system data to benchmark water and wastewater systems and prioritize potential projects; Account Representative reaches out to customer; Access agreement signed to allow on-site audit; Develop list of projects and present to customer; Implement selected projects; Ensure project is installed and verified; Perform post-installation M&V; Process incentive
Marketing approach	Direct: Outreach directly to water agencies.
Coordination with Core	No (however, adjusted pump overhaul incentives to match Core program)
Coordination w/ Other Programs	Some, leveraged one program to obtain customer data
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Pump test data; Account Representative for outreach

Customer Incentive	Rebate based on estimated energy savings
Implementer Incentive	Performance-based per estimated energy savings
Installation	Contractor
Audit type	Measure-specific

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$1,357,555	0	0	0
Actual (b)	$774,071	N/A	N/A	N/A
% Goal achieved	57%	N/A	N/A	N/A
Participants (c)	N/A			
Cost Effectiveness (d)	Net TRC: N/A	Net PAC: N/A		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) No energy savings data available in CPUC Program Database covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records. No claim records available in the CPUC Program Database.
(d) No data on Total Resource Costs and Program Administration Costs available for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

The Lincus WISE Program emerged under the umbrella of innovative IDEEA 365 programs and is designed to gather energy savings by optimizing water and wastewater systems from water districts, water agencies, and wastewater and water treatment plants. This customers segment generally focuses on the provision of clean drinking water and lacks the knowledge and resources to pursue energy efficiency upgrades on their own. In addition, energy savings have not been a big priority in this sector as electricity costs are typically carried by the ratepayer.

> *[Customers] are typically interested in the program. They are typically willing to participate in the program. The challenge has been getting information from them. They don't have the time to spend on this. So it is really about driving down to their site, collecting information directly at the site. – Program Implementation Staff*

The program seeks to develop long-term relationships with customers to grow energy efficiency investments over time. As such, the program is designed to start with component level projects before continuing more detailed analyses of water and wastewater systems, flow variations, to full system modeling.

While PG&E offers pump overhauls through their Core Advanced Pumping Efficiency Program, Lincus WISE targets deeper savings from comprehensive Retrocommissioning (RCx) of water and wastewater systems. The program benchmarks total potential savings across their entire system, performs a project feasibility study, and provides technical assistance to guide the customer through a multi-tiered process that begins with the simple optimization of existing pumps, continues with system control strategies, and ultimately seeks to improve integrated demand management. The program also includes the Water Energy Nexus component,

which offers education and case studies to demonstrate embedded energy use and energy intensities of water and wastewater systems and which showcases the benefits of comprehensive system overhauls.

The implementer, Lincus is an engineering consulting services provider and runs the program for SDG&E and SCE[35] as well.

Marketing Approach and Reliance on Local Government Partnerships

The implementer identifies potential program participants based on the analysis of pump test data, which is provided from PG&E. In some cases, PG&E's account representatives refer customers to the implementer. Either way, Lincus works closely with the account reps when reaching out to customers.

The program does not coordinate with Local Government Partnerships.

Coordination with Other Programs

The program does not refer customers to PG&E's Core programs, however, matches any incentives provided through Core. Lincus WISE does coordinate with other programs to leverage data for the identification of potential program participants.

Implementation Effectiveness

Implementer Role

Lincus offers this program throughout PG&E's service territory. In addition, the implementer offers similar programs in SDG&E and SCE service territory.

Lincus assigns a program manager to the program and has the engineering capacities in-house to analyze pump test data, develop the project scope, identify energy efficiency and RCx measures to optimize flow variations, system pressure, water and wastewater treatment effectiveness, and provide operators additional sensors and controls to manage water operations.

The implementer conducts the following:

- Pump test data analysis & benchmarking (high level site walk to identify preliminary measures)
- Marketing & outreach
- Phased project implementation of measures to align with customer timelines and budget cycles
- Detailed energy assessment with measures the customer may implement
- Financial project proposal for customer to present to management, board, or council
- Technical assistance: liaison with contractors and manufacturers
- Verification/QA: M&V of water and wastewater system optimization measures and Post-installation pump test QA
- Water Energy Nexus analysis

[35] SCE's and SDG&E's programs are classified with a target market that is not Commercial, these programs are therefore not included in this evaluation.

3.1.17 Air Care Plus

Program Characteristics

IOU	PG&E, PGE21016
History	Originated in 2006 as PG&E's primary commercial HVAC offering until Commercial Quality Maintenance Program originated in 2010
Target market	Midstream: Horizontal market expertise; program targeting HVAC contractors; downstream: commercial HVAC systems with a capacity of 3-60 tons
Measures offered	• Diagnostics using AirCAre Plus Software • Tune-ups / adjustments (coil cleaning, refrigerant charge, economizer repair) • Replacement (belts, install programmable thermostats)
Services offered	Training (contractor) Verification
Measure Impact Type	Deemed
Value/Why it originated	Generate savings from HVAC tune ups and repairs; Market transformation in the commercial HVAC space
How it differs from Core	AirCare Plus software not available in Core, no paperwork for the customers
Same Measures in Core	Some (software not) offered through statewide Quality Maintenance Program
What is innovative	None, but enables HVAC services that contractors traditionally do not offer through their services
Fuel Focus	Mostly gas, some electric

Delivery Overview

Implementer	CLEAResult
Delivery Model	Implementer trains contractor; Contractor markets the program, schedules appointment and develops the Scope of Work; Installation/tune-up conducted by contractor; 100% QC through visual inspection by implementer; Implementer generates service report; Follow up with satisfaction survey by implementer; CIP inspection by PG&E on selection of projects
Marketing approach	Indirect through contractors: Implementer provides marketing materials to contractors who market the services to their customer pool, PG&E Energy Solutions & Service and implementer also provide leads
Coordination with Core	No
Coordination w/ Other Programs	On-bill financing program
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Leads from Energy Solutions & Service (ES&S)
Customer Incentive	Contractor receives the incentive paid by deemed savings, customer only has co-pay
Implementer Incentive	Paid by deemed savings
Installation	Program contractor
Audit type	Measure-specific

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$10,883,237	19,008,885	5,505	290,242
Actual (b)	$6,511,740	6,453,916	802	484,577
% Goal achieved	60%	6,453,916	802	484,577
Participants (c)	471			
Cost Effectiveness (d)	Net TRC: 0.78	Net PAC: 0.78		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

PG&E's AirCare Plus is a low-cost HVAC tune-up program to generate energy savings from commercial customers with an HVAC system capacity between 3 and 60 tons. Systematic HVAC diagnostics lack both demand from end-users as well as supply of these services from HVAC contractors. The program therefore provides contractors with training, tools and incentives to inspect HVAC systems, and adjust these systems accordingly.

> *I think the first and foremost [barrier] is awareness. For most customers… the packaged rooftop units… are out of sight, out of mind. As long as the heating and AC is working these customers aren't necessarily paying attention to the equipment on the roof. They …don't understand the value of regular maintenance and how it has significant energy savings associated with it. On the other hand contractors are very busy in California maintaining equipment in their current customer pools to basically just minimize the amount of service calls they get. So ACP helps contractors integrate EE into their Core offering so that contractors have more business reasons to provide these services.*
> *Program Implementation Staff*

The implementer, CLEAResult, provides participating contractors Air Care Plus software and training to perform HVAC tune-ups. The tune-ups include diagnostics as well as the appropriate system tune-up after inefficiencies have been identified. The contractor also installs programmable thermostats on site, or re-program existing ones.

Marketing Approach and Reliance on Local Government Partnerships

The implementer reaches out to potential program contractors through existing relationships and industry networks. However, contractors may also hear about the program through PG&E account representatives or an Energy Solutions & Services Rep.

The implementer, PG&E's customer service representatives, PG&E's Energy Solutions & Services reps and contractors identify potential program participants. Although the majority of project leads come from the utility,

CLEAResult markets the program directly by leveraging existing relationships, or indirectly through the HVAC contractor network.

The program does not coordinate with Local Government Partnerships.

Coordination with Other Programs

The program does not coordinate with PG&E's Core programs. Although on-bill financing (OBF) is available to customers, the tune-up costs are rarely high enough to satisfy the OBF threshold of $5,000.

Implementer Role

CLEAResult has implemented the AirCare Plus program since its inception in 2006. The implementer works closely with PG&E to establish savings goals and budgets, and performs the following tasks:

- Marketing & customer outreach
- Contractor training
- Verification/QA: Implementer inspects 100% of projects
- Customer feedback survey: customers fill out a customer feedback survey. According to the implementer, feedback is mostly positive. The nature of complaints typically surrounded the program's transition from a no-cost to a co-pay model, or a slow response time by contractors.

Contractor Role

During the 2013-14 cycle, the program worked with 12 contractors. A program-vetted contractor has to hold a HVAC contractor license, commercial refrigeration license, and successfully complete a training on administrative program procedures as well as a 1 to 2 days technical training.

A program-vetted contractor has the following responsibilities:

- Marketing & customer outreach,
- Site inspection,
- Installation of AirCare Plus software.

3.1.18 Boiler Energy Efficiency Program

Program Characteristics

IOU	PG&E, PGE21017
History	Originated in 2006; leveraged air quality regulations by influencing incremental therm savings measures above minimum NOx burner/boiler compliance; added new measures to the program as opportunities arose. Designed to capture therm savings in a portfolio that focused more on electrical savings, at a time when gas prices were rising.
Target market	Downstream: Horizontal market expertise; boilers with a capacity of 3 to 60 tons.
Measures offered	• Boiler replacements and controls • Feed water economizers • Other measures available (e.g., steam traps, VFDs, heat recovery)
Services offered	Energy audit Business support
Measure Impact Type	Custom and Deemed
Value/Why it originated	Energy savings from hard-to-sell measure; Implementer identifies new savings opportunities
How it differs from Core	Seeks deeper retrofits; faster turnaround
Same Measures in Core	Yes
What is innovative	None, strategy to achieve savings from otherwise under-utlized measure
Fuel Focus	Electric and Gas

Delivery Overview

Implementer	Enovity
Delivery Model	Audit focused on boiler upgrades; Customer hires vendor for installation; Measure verification report (operational data, trends, invoices, and images); Customer survey
Marketing approach	Direct & Indirect: Mailings and telemarketing; leverage trade associations; industry events in early program years; referrals from Account Reps and vendors
Coordination with Core	Some cross-referrals
Coordination w/ Other Programs	No
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Referrals from Account Representatives, marketing, engineering review
Customer Incentive	Deemed Rebate and Custom Rebate based on energy savings, incentive capped at 50% of project costs
Implementer Incentive	Performance-based per installed energy savings
Installation	Customer hires vendor
Audit type	Measure-specific

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$3,439,847	59,202	16	1,284,337
Actual (b)	$4,277,625	164,437	43	1,430,565
% Goal achieved	124%	278%	265%	111%
Participants (c)	61			
Cost Effectiveness (d)	Net TRC: 0.64	Net PAC: 2.13		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Marketing Approach

The program leverages PG&E Account Representatives to market the program. Early in the program the implementers attended industry events, often hosting a booth or similar activities. Since the program has matured and potential customers are more known, the implementer will generally use more direct outreach, direct mail, direct email, and direct calling to recruit. PG&E Account Representatives will provide lists of energy users and the implementer will follow up.

Using the PG&E name adds legitimacy to the program when the implementer goes out to market the program. PG&E Account Representatives help by talking to customers and referring the boiler program to them, if appropriate. Technology vendors will also connect potential customers to the program, which provides rebates for the equipment they are selling.

Value/Filling a Need in the Marketplace

The 3P program offers customers technical assistance to discover boiler savings opportunities. The implementer will guide customers in the selection of boiler upgrades, help them understand the options, and provides a neutral "voice of reality" perspective that tends to be more conservative than vendors. The process is quick and customer-oriented.

> *I think we bring some good upfront service in really working closely with the customer and helping them from where they are. So it may be that they have no clue what they could do and I think starting from scratch and finding out what they can do is something we are really good at and have a lot of experience at. There are, especially with these industrial applications, there are a lot of things that people don't initially think of but our guys have a lot of experience at. So I think helping them discover opportunities that they might not have seen. That is one strength. Then working with them from the things they have found to ensure that is it really going to… they have identified some projects but they don't really know what the savings are going to be. Is this worth it? And providing them with accurate numbers. Sometimes we have had a vendor… the vendor is trying to make a sale and they say you put in this feed water economizer and you are going to save a gazillion therms and then we come in and we are the voice of reality for the customer. We help them to understand before they get into something whether or not this is something*

> *that works for them and what the benefit are. We are generally conservative on our estimates. The customers that finish our program generally end up with more therm savings and with a better incentive than they thought they were going to get because we like to be conservative and cautious on our estimates. I think that has been a benefit. We are quick. We are customer oriented. They really like that as compared… sometimes working with PG&E things can be slow and a bit bureaucratic. We hope we can convert them to customers for other services. We are really giving them a top-notch service. – Program Implementation Staff*

The program was originally proposed to fill the therm savings gap in the portfolio at a time when gas prices were rising. Boilers continue to be a frequently overlooked technology due to a focus on kWh savings. The measure is offered in Core, but the handholding and sales/outreach team is really needed to get the measure implemented. It has been difficult to get customers to see the value otherwise as most tend to only want to replace something when it breaks.

> *We do other things that are outside of program utility work that bring a multi-disciplinary aspect to our Engineers that is focused on implementation, customers. We work with customers and advise them on technical aspects of all sorts of different things including boiler stuff. It is just that focus on implementation and that broad base of experience that our staff has that might be different. If we were just implementing programs we might have a more narrow view of how we thought we could add value and motivate customers. But with coming at it from both sides, having more empathy with the customer and also being driven by performance and results for the utility, we are able to cover that middle ground that maybe the utility would not be able to do on their own. – Program Implementation Staff*

Coordination with Other Programs for Deeper Savings

The IOU reports greater attention spent on trying to get the 3P and Core programs to interact and understand each other better, so as to better serve customers overall without competing. In the past, Core and 3P programs were run separately and had little interaction at the management level. There is also no coordination with LGPs.

There will occasionally be some cross-program referrals; if the implementer notices something customers might be interested in (or if it comes up), they will refer them to the PG&E Account Representative or mention that rebates exist for those measures.

Implementer Role

The implementer conducts the following:

- Marketing and Outreach,
- Engineering Assessment/Evaluation,
- Project Installation,
- Verification/QA (EM&V Report for Custom; Rebate Verification Report for Deemed – 100% of projects approved by PG&E),
- Collects customer feedback in satisfaction survey; final incentive payment is contingent on signing and completing that survey.

3.1.19 EnergySmart Grocer

Program Characteristics

IOU	PG&E, PGE21018
History	On-going since 2006 in this design, based on statewide CEC initiative that launched in 2002; added measures to the portfolio since 2006 and expanded target market to server smaller facilities. Used to develop work papers to introduce measures, which is no longer possible for implementers.
Target market	Downstream: Vertical market expertise; grocery and big box stores
Measures offered	• Refrigeration (dominant measure) • Lighting, • Food service technologies, • Some HVAC measures, • Grocery-specific recommissioning and controls
Services offered	Energy audit Installation support Training (contractor)
Measure Impact Type	Deemed
Value/Why it originated	Energy savings in hard to reach markets
How it differs from Core	More measures, turnkey, faster turnaround, implementer's segment expertise
Same Measures in Core	No
What is innovative	None, strategy to reach market
Fuel Focus	Electric

Delivery Overview

Implementer	CLEAResult
Delivery Model	On-site audit to produce report using EnergySmart modeling software. The report identifies short-term, mid-term and long-term recommendations; Implementer facilitates bid process or works with customer's contractor; Contractor and implementer develop install schedule; Implementer completes rebate package
Marketing approach	Direct: Leverage existing relationships with participants; direct mailings and follow up telephone calls. Little marketing as program is marture
Coordination with Core	No
Coordination w/ Other Programs	On-bill financing program with PG&E
Work with LGPs	Very limited to coordinate potential overlap
Reliance on LGPs	No
IOU Support	None
Customer Incentive	Rebate to customer or contractor as per customer preference
Implementer Incentive	Deemed (majority) and performance-based per kWh saved energy savings
Installation	Contractor
Audit type	Facility-wide

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$10,762,259	39,222,095	4,142	230,060
Actual (b)	$12,666,511	40,594,594	4,685	199,226
% Goal achieved	118%	103%	113%	87%
Participants (c)	395			
Cost Effectiveness (d)	Net TRC: 2.82	Net PAC: 2.41		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Marketing Approach

The program is quite mature and most grocers in the area have known the implementer for at least 2-3 years, if not more. Therefore, the program focuses its efforts on revisiting past customers to pursue deeper, more comprehensive measures.

In the early beginnings of the program, CLEAResult would cold call grocers and try to identify the decision maker, usually a facility manager or dedicated energy manager if it was a large chain. Today, new grocers tend to hear about the program via word of mouth. Their service contractor might have worked with CLEAResult in the past with other grocers who participated in the program, and will let the new grocer know that CLEAResult can help advise them on energy measures and provide incentives. Other grocery stores who the new grocer might overlap with, e.g., sharing the same distributor, might mention the program, and other grocer friends of the new grocer who were past program participants may mention it as well. However, most grocers are already aware of the program and have developed a relationship with CLEAResult over several years.

> *I will start by saying that the grocers we work with today mostly have known us for at least 2 or 3 years, if not more. So we are not finding a lot of new grocers who have not heard of our program. – Program Implementation Staff*

Value/Filling a Need in the Marketplace

The 3P program reaches large supermarkets and began at a time when there was no refrigeration program targeting this customer segment, even though supermarkets were some of the IOUs largest accounts. Having a dedicated program made a lot of sense to account representatives, and they gave their full support. The program has been very successful since inception.

The program differs and provides value in addition to Core in several ways:

1. The 3P program is a deemed retrofit program (unlike Core which is calculated) making it quicker and easier to implement – this is a nice option for strategic account managers who work with chain customers

2. The 3P program offers more measures than Core

3. The 3P program is turnkey, and the implementer is known to have expertise working with refrigeration customers around the country. CLEAResult has been implementing these types of programs in PG&E territory, in the Northwest, and around the US for several years. CLEAResult are experts in refrigeration and perform the audits, provide technical support to customers, and facilitate the entire project. Without CLEAResults' assistance, most grocers probably would not be able to facilitate efficiency opportunities.

> *Many of the suggested improvements are quite expensive and without having someone to provide a payback analysis or understanding how this is going to help them long term it is really hard for grocers to want to commit to any type of long term payback measure that they may not understand how they are going to reap the benefits. I would say first and foremost that analysis of understanding how the savings will translate directly to cost reduction on their utility bill, and then how long they can anticipate the payback to be and when the cost of reduction will be permanent is a major factor. I don't think grocers have a lot of time to do that analysis themselves. They may not trust the savings. So they get approached by a product manufacturer selling them something that sounds too good to be true. They have no way of knowing without the help of our Account Managers whether that is a viable solution or something they should implement. Often times our Account Managers will have in-depth knowledge of the systems that are in the grocer's store and understand how those systems interact. Something that may save energy at one store may not save it at another. Our Account Managers are able to identify what measures are best suited for the customer and which ones will result in long-term persistent savings. Another factor is cost. Our program is valued at providing incentives, and those factor back into the payback as well. So they help reduce the payback amount and reduce the out of pocket cost for the grocer. – Program Implementation Staff*

An additional benefit are the consistent, long-term relationships with grocers in PG&E territory that CLEAResult has built up over the years. The 3P program has traditionally focused on medium to large grocery stores, but recently has increased its scope to smaller convenience stores that may have some refrigeration, like Walgreens and RiteAid. CLEAResult has been successful with its model called **Inform to Invest,** which they have run since 2006. The program introduces customers to short-term, high payback energy saving measures and once successful will encourage grocers to do more complex types of retrofits.

> *The model that the program has followed is called Inform to Invest. This has been the same model that we have run since 2006. The idea is that an Account Manager in the field who has both technical aptitude and sales background is working with grocers to identify a long-term plan for implementing savings measures. So they will identify short term, medium term and long term opportunities through an energy audit. After introducing the customer to the short term, maybe shorter payback, less costly EE measures. Once the grocer completes those projects the Account Manager will then encourage the grocer to reinvest the savings into the more costly, more complex types of measures…It really promotes a long-term relationship with the grocer. We are not the kind of program that is going to work with a store once and then never again. We are constantly developing new measures, new technologies coming into the market that help a grocer save energy. So there is always something new they can do to improve on their energy use and reduce their cost. – Program Implementation Staff*

In addition, the implementer and IOU staff touched upon the following key strengths of the program:

- **Building Long-Term Customer Relationships for Long-Term Savings.** The program has been around since 2006 and CLEAResult knows all the grocers in the area. They have become trusted energy advisers for grocery stores.
- **Achieving Repeat Customers.** The implementer has stressed how much effort they put into attracting repeat business. In terms of numbers, the implementer reports that 100% of their national chain customers are repeat customers (national chains represent about 60% of their pool of 1,700 customers in the territory that fit the program criteria). Of the remaining 40% of customers, about a third have done all the recommend measures, another third have done one measure and never come back, and the last third have not been engaged at all.
- **Spinning Energy Efficiency as a Way to Save Cost and to Improve the Look of Grocery Stores**

Coordination with Other Programs for Deeper Savings

The program does not coordinate with Core or other programs. It does coordinate with PG&E's on-bill financing program and has become a facilitator for that program.

> *One other thing I will call out that has developed in that last few years is PG&E has rolled out an on-bill financing option. I think without our program, grocers would not be signing up for that option. We have seen a lot of success with that program and have been able to get a lot of projects through that program. The process is really confusing to an outside party. I don't think a customer would be able to navigate the application process that is in place in order to obtain those funds without our help…So we have developed this new role as facilitator of on-bill financing. – Program Implementation Staff*

Implementer Role

The implementer conducts the following:

- Customer Outreach,
- Free Energy Audit/Assessment,
- Verification/QA/QC: CLEAResult will perform a post-inspection on about 85% of their projects; PG&E will inspect around 5%,
- Rebate processing,
- Collects customer feedback via email survey, but according to the implementer:

> *The best indication of customer satisfaction is their interest in doing more work. If there is an issue we will always know about it and be motivated to resolve because we want to continue doing work with that customer. – Program Implementation Staff*

Customers use their own contractor to perform the installation. If the customer has no contractor, CLEAResult will recommend that they issue an RFP for bids from several contractors. CLEAResult prefers to stay neutral when it comes to contractors. The implementer does however, have a Salesforce platform on which they track project opportunities and process rebates. They are able to run reports easily to see how much work customers are doing with which contractors.

> *We have specialized software that we have developed specifically for the purpose of auditing grocery stores called Grocer Smart. Grocer Smart is a very sophisticated tool. It actually can*

create a model of a grocery store with all the inputs that are collected. The process takes about 4 to 6 hours. We collect all of the data in the grocery store including cases, model numbers, number of lamps, types of motors and everything that is included in a refrigeration system, HVAC, food service and lighting. We also interview the local store manager to talk about any operational issues that might have been going on or just get more details on the store from that person. Then at that point, our software is able to spit out a list of recommendations along with the summary of the data. Within that list of recommendations the Account Manager would look at that list and categorize them as phases…We also focus on trouble areas first. At that point, once the grocery has selected the projects they are interested in, we facilitate a bid process if they don't have a contractor. Or if they do specify a contractor then we will work directly with that contractor to get a bid for the work. Of course, part of that process is for us to assess the incentives that would be available so that the customer gets a complete picture of what the measure will cost and how much they are estimated to save and how much incentive they can expect. At that point the customer would agree to the project, or accept the bid and proceed with an install date, or set an install schedule. We would work with the contractor to make sure the installation was occurring to our terms and conditions so that the projects would still qualify for incentives after it was completed. And then once the project is complete we would put together a rebate packet internally that includes signed paperwork from the customer that agrees to participate in the program and also agrees to authorizing the incentives to be paid. And an invoice. And we process that in our system and cut a check to the grocer or sometimes the contractor depending on the customer's preference for the rebate. The last thing to say as the next step is, we propose another project. – Program Implementation Staff

3.1.20 Commercial Utility Building Efficiency (CUBE)

Program Characteristics

IOU	SCE, SCE-13-TP-014
History	On-going since 2010 in its current design
Target market	Commercial and retail buildings using HVAC equipment, motors, and lighting at near the end of their useful lives and owners who lack capital to replace equipment
Measures offered	• HVAC equipment controls/VSDs and Motors (dominant measures) • Traditional and advanced lighting.
Services offered	Energy audit Business support Turnkey installation
Measure Impact Type	Custom and Deemed
Value/Why it originated	Energy savings from hard-to-reach market; Implementer is large manufacturer of HVAC systems
How it differs from Core	Free audit and technical expertise to pursue a more comprehensive upgrade
Same Measures in Core	Yes
What is innovative	None, strategy to reach market
Fuel Focus	Electric

Delivery Overview

Implementer	Trane
Delivery Model	Meeting with customer to determine value and scope; Customer signs Program Agreement Form; Measure-specific audit to produce a project scoping document and a project feasibility study for SCE's review; On-site inspection through SCE's external reviewer; Customer signs Customer Agreement Form; Customer hires contractor for installation upon SCE's approval of project; Implementer submits Proof of Equipment and Installation Report for SCE's review; Verification through on-site inspection from SCE's external reviewer
Marketing approach	Direct: Mailings, email & phone calls from Trane Account Managers, SCE Account Representatives, personal program website
Coordination with Core	Referrals to on-bill financing
Coordination w/ Other Programs	No
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Referrals
Customer Incentive	Rebate paid by SCE based on installed energy savings
Implementer Incentive	Performance-based per installed energy savings paid in three milestones
Installation	Trane or customer's contractor

Audit type	Measure-specific

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$2,729,094	22,378,693	4,971	0
Actual (b)	$1,410,895	11,643,857	2,203	-21,934
% Goal achieved	52%	52%	44%	N/A
Participants (c)	28			
Cost Effectiveness (d)	Net TRC: 2.02	Net PAC: 9.46		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

The Commercial Utility Building (CUBE) Program is designed to gather electric savings from hard-to-reach customers in large commercial office buildings who typically lack the knowledge to pursue complex energy efficient upgrades related to HVAC systems. The program targets commercial and retail buildings using HVAC equipment that is near the end of useful life but lack the capital to replace equipment. While most measures are available through SCE's Core portfolio, the program offers no-cost facility audits along with technical assistance to guide the customer through the upgrade and rebate process. According the implementer, the program enables larger retrofits and thus deeper savings.

> *[Customers] get very individually focused on one thing…they will do 1 VFD replacement….In no way can the customer go and do an energy model that represents how this HVAC equipment is going to affect their building. It is just not possible. It is a full time job for energy engineers, which is generally not in the building… With our knowledge and expertise, we have the ability to work on and understand HVAC and controls because we are trained. We are able to not only simplify some of it for them but we are also able to show them the value of doing it together. So instead of just doing the individual motor they are able to do the larger projects because they can show that value up to their bosses. They are able to get the larger incentives and make it worth their time to work through the process and not just do it immediately. –Implementation Staff*

Marketing Approach and Reliance on Local Government Partnerships

The program approaches prospective participants through a mix of implementer and IOU outreach. The implementer has a sales team in-house that promotes the program when selling Trane equipment to eligible customers via telemarketing or conferences. The implementer leverages IOU credibility, but does not rely on SCE to generate leads or provide marketing materials. However, in some cases SCE's Account Managers provide the implementer with project leads from interested customers.

The program generally does not coordinate with Local Government Partnerships (LGPs). The implementer avoids marketing the program to customers in areas where LGPs offer overlapping program services.

Coordination with Other Programs

The program refers customers to on-bill financing, but does not coordinate with Core or other 3P programs otherwise.

Implementer Role

3P program implementation is a side-business for Trane. The company is one of the largest manufacturer of HVAC systems worldwide, and can therefore provide in-depth technical expertise.

The implementer conducts the following:

- Marketing & Outreach
- Audit & Project Feasibility Study
- Technical Assistance
- Installation Report
- Verification

In addition, customer liaison is an important responsibility as the implementer guides the customer through the upgrade process. The implementer liaises closely with customers on a number of matters related to program implementation. For example, the implementer communicates any changes made throughout review processes, and facilitates meetings if there is need for further explanation. The implementer also coordinates with external consultants hired by customers, and monitors that incentive payments are made by SCE.

3.1.21 Healthcare EE Program (HEEP)

Program Characteristics

IOU	SCE, SCE-13-TP-003
History	Started in 2008; had a stronger focus on lighting in early program years
Target market	Downstream: Vertical market expertise; Medical facilities and acute care facilities
Measures offered	• HVAC-upgrades • Time of day controls • Occupancy and lumen sensing • Comprehensive lighting • CO sensors and virtualization of data center servers • Variable frequency speed drive for chilled water or hot water loops • HVAC motor upgrades • Chiller Upgrades •Heat exchangers • Variable frequency drive motor use on VAV fans
Services offered	Energy audit Benchmarking Technical assistance Business support Verfication
Measure Impact Type	Custom and Deemed
Value/Why it originated	Energy savings in hard-to-reach markets
How it differs from Core	Free audit
Same Measures in Core	Yes
What is innovative	None, segment strategy
Fuel Focus	Electric

Delivery Overview

Implementer	Willdan Energy Solutions
Delivery Model	Meeting with customer to determine value and scope; Customer signs Program Agreement Form; Facility-wide audit to produce a Project Feasibility Study Customer reviews Project Feasibility Study, and selects measures or adopts the entire project scope Implementer revises Project Feasibility Study if necessary SCE reviews Project Feasibility Study, and conducts a site inspection with the implementer Upon SCE's approval, customer hires contractor for installation or preforms the work in-house (before or during installation, the implementer submits a Proof of Equipment order) Implementer conducts post-installation audit (together with SCE, mandatory for all projects), short-term M&V (if required), and submits a Post Installation report; SCE approves the Post Installation report and pays incentive to customer or other designated recipient

Marketing approach	Direct: Leverage industry associations, personal meetings, program marketing materials, case studies, seminars, websites
Coordination with Core	No
Coordination w/ Other Programs	Referrals to and support in navigating SCE's on-bill financing program
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Account Executives; engineering review for custom projects
Customer Incentive	Rebate or reduced contractor bill (depending on customer preference)
Implementer Incentive	Performance-based per installed energy savings paid in three milestones
Installation	Contractor
Audit type	Facility-wide or measure specific, depending on customer

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$4,266,874	13,765,286	2,064	0
Actual (b)	$2,637,016	1,913,548	169	262,027
% Goal achieved	104%	31%	17%	291%
Participants (c)	7			
Cost Effectiveness (d)	Net TRC: 1.10	Net PAC: 2.67		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

SCE's Healthcare Energy Efficiency Program (HEEP) is designed to gather electric savings from customers in healthcare facilities who typically lack financial resources to pursue large energy efficient upgrades on their own. HEEP helps overcome this barrier by offering no-cost facility audits and technical assistance to guide customers through the upgrade process. However, providing hospitals with an incentive for energy efficiency upgrades is also important as hospitals prioritize budget expenses related to medical service and patient comfort.

> *The most important thing in a hospital is they want to make sure everyone is comfortable. Because every patient has sent a survey after their stay in a hospital. Those surveys are to be sent to the insurance companies and the more favorable the patient's experience has been, the better insurance rate the hospitals get. So, they would rather spend money making sure the patients are having a great experience than upgrading equipment to be more energy efficient. They would rather invest money in patient experience and save money on their insurance than invest the money on energy efficiency and save money on*

their utility bill…. To have a financial incentive reserved on their behalf and being able to demonstrate to the decision makers that there is an opportunity to offset the cost for doing the project… has definitely been influential. –Implementation Staff

The program implementer, Willdan, has extensive experience with energy efficiency upgrades in the healthcare industry, and has run PG&E's and SDG&E's[36] 3P healthcare programs since 2010. Sector-experience is particularly important for healthcare programs as many retrofits are subject to review and approval from the California's Office of Statewide Health Planning and Development (OSHPD), which adds an additional layer of complexity to project implementation.

Marketing Approach and Reliance on Local Government Partnerships

SCE account representatives play an important role in the identification and outreach to prospective participants. To a lesser degree, Willdan leverages existing relationships with the senior management of facilities that participated in other IOU service territories, or with facility directors who received other engineering services from Willdan.

Currently, the program does not coordinate with Local Government Partnerships (LGPs). However, SCE has started a dialogue to foster a relationship and potential referrals moving forward.

Coordination with Other Programs

The program refers customers to on-bill financing, but does not coordinate with Core or other 3P programs otherwise.

Implementer Role

Willdan is the implementer for PG&E's, SCE's and SDG&E's[37] Healthcare Energy Efficiency Programs.

For this program, Willdan establishes the savings goals using the E3 calculator based previous performance and the existing project pipeline. In addition, the implementer conducts the following:

- Marketing,
- Facility audit (typically ASHRAE level 2, collection of trend data if needed),
- Technical assistance to develop RFPs, hire contractors, liaise with contractors,
- Verification/QA: Analysis of post installation trend data, data loggers,
- Incentive payment to customer or contractor.

[36] Not included in the 3P Commercial Process Evaluation as this is a non-resource program.

[37] This is a non-resource program and not covered in the 3P Commercial evaluation.

3.1.22 Data Center Energy Efficiency

Program Characteristics

IOU	SCE, SCE-13-TP-004
History	On-going since 2010
Target market	Downstream: Vertical market expertise; Data centers (larger stand-alone facilities or embedded in commercial buildings)
Measures offered	• Control system upgrades including wireless sensors; • Variable frequency drives (VFDs) on computer room air conditioners fans; • VFDs on chillers and pumps; • Cooling set point adjustment to maximize system efficiency; • Optimize air economizers to save cooling energy; • Equipment scheduling changes; • SprayCool server racks; • Occupancy sensors; and • Lighting upgrades
Services offered	Energy audit Technical assistance Business support Education Verification
Measure Impact Type	Custom and Deemed
Value/Why it originated	Energy savings in hard to reach market
How it differs from Core	Same measures as Core but offer technical assistance
Same Measures in Core	Yes
What is innovative	None, sector strategy
Fuel Focus	Electric

Delivery Overview

Implementer	Willdan Energy Solutions†
Delivery Model	Meeting with customer to determine value and scope; Customer signs Program Agreement Form; Measure-specific audit to produce a project scoping document and a project feasibility study for SCE's review; Customer signs Customer Agreement Form; Customer hires contractor for installation upon SCE's approval of project; Implementer submits Proof of Equipment and Installation Report for SCE's review
Marketing approach	Direct: Leverage industry associations and Account Representatives; participate in data center industry events
Coordination with Core	No
Coordination w/ Other Programs	Yes, referrals to SCE's on-bill financing offered, but low take-up
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Referrals from Account Executives; engineering review for custom projects

Customer Incentive	Rebate or reduced contractor bill (depending on customer preference)
Implementer Incentive	Performance based: set rate per kWh saved
Installation	Outsourced; Customer can choose own contractor
Audit type	Facility-wide or measure specific, depending on customer

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$3,065,826	18,885,577	2,557	0
Actual (b)	$3,643,191	7,861,909	665	-2,504
% Goal achieved	119%	42%	26%	N/A
Participants (c)	12			
Cost Effectiveness (d)	Net TRC: 1.14	Net PAC: 1.86		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

†The Implementer's Vice President conducted the interview with the Evaluation Team since it was experiencing some staff turnover and was about to hire a new Program Implementation Manager. The Vice President was able to cover most of the interview topics, but did not provide the amount of detail offered by other implementers due to the staff turnover issue.

Program Value

Marketing Approach and Reliance on Local Government Partnerships

To market the program, SCE's account representatives refer customers to the program. Otherwise, the implementer participates in data center industry events, such as the Green Data Center Summit. The program does not work with Local Government Partnerships.

Value/Filling a Need in the Marketplace

This program helps data centers to better manage their energy use through financial incentives for comprehensive retrofits of HVAC equipment and lighting. The program mainly targets large stand-alone data centers and co-location data centers, as centers that are embedded in commercial buildings (e.g. banks, hospitals, and large insurance companies) tend to have their own data centers located in their buildings or campuses.

The program is able to offer specific expertise in data centers so it can effectively sell energy efficiency upgrades to this segment. Energy efficiency is a hard sell to data centers because they are very specialized and are concerned that energy efficiency upgrades will disrupt operations. Therefore, data centers need to speak with staff who are experts at understanding this segment or they will not consider energy efficiency.

Coordination with Other Programs for Deeper Savings

This program does not coordinate with any other programs. The account executives sometimes refer the 3P program customers to the On-Bill-Financing program.

Implementer Role

The implementer does the following for a given customer:

- Help evaluate project proposals from contractors,
- Recommends what the customer should do,
- Conducts a measure-specific or facility-specific audit depending on customer wants, on-site,
- Prepares project feasibility study for the customer,
- Collects all program data, pre- and post- project, needed to support energy savings,
- Verifies project specifications.

3.1.23 Lodging EE Program

Program Characteristics

IOU	SCE, SCE-13-TP-005
History	On-going since 2010 in current design
Target market	Downstream: Vertical market expertise; Existing hotels and motels as well as spas and resorts, especially those with central plants and in-house laundry service
Measures offered	• Comprehensive lighting and controls retrofits (exterior, common areas and guest rooms); • Retrocommissioning (RCx); • Dual speed pool pumps with electronic controls; • Package AC replacement, PTAC and package terminal heat pump (PTHP) replacement; • Vending machine controls; • Efficient ice machines with peak shifting controls; • In-room PTAC energy management systems (EMS)
Services offered	Energy audit Technical assistance Customer survey
Measure Impact Type	Custom and Deemed
Value/Why it originated	Energy savings in hard to reach markets
How it differs from Core	Focus on customer education and technical assistance (to calculate savings for customer to make a decision)
Same Measures in Core	Yes
What is innovative	None, strategy to reach market
Fuel Focus	Electric

Delivery Overview

Implementer	Willdan Energy Solutions
Delivery Model	Customer signs Program Agreement Form; Facility-wide audit to produce a project scoping document and a project feasibility study for SCE's review; Customer signs Customer Agreement Form; Customer hires contractor for installation upon SCE's approval of project; Implementer submits Proof of Equipment and Installation Report for SCE's review; Verification through on-site inspection from SCE's external reviewer
Marketing approach	Direct & Indirect: Leveragre industry association; pogram materials; personal meetings; seminars and conferences; one-on-one marketing by contractor
Coordination with Core	No
Coordination w/ Other Programs	No
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Engineering, limited referrals

Customer Incentive	Rebate paid by SCE based on installed energy savings
Implementer Incentive	Performance-based per installed energy savings, paid in three milestones
Installation	Contractors
Audit type	Facility-wide

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$4,668,711	17,828,787	2,539	0
Actual (b)	$5,074,592	15,205,642	1,937	-514
% Goal achieved	109%	85%	76%	N/A
Participants (c)	35			
Cost Effectiveness (d)	Net TRC: 1.47	Net PAC: 1.95		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Marketing Approach

Most of the program's participation comes by word of mouth and/or repeat customers. Directors of Engineering tend to jump from hotel to hotel, and those who have worked with Willdan before will call and ask if there are incentives available at their new facility. Willdan also works with large corporate chains, such as Marriot International or Starwood, who manage several companies. The IOU says it does assist the program with customer outreach, but the implementer expressed the sales rep will refer customers to Core instead of the 3P program. Many projects come from repeat customers.

> *There are ownership groups I work with, and when they acquire new hotels I am one of their first calls to say we want to get in and get incentives because we are going to be doing a lot of work. – Program Implementation Staff*

> *You have to remember these programs have been running for 5 years. So I might have done LEDs with them last year and this year we are focused on HVAC. Or they may be doing some controls and EMS upgrades now, and then next year we will focus on lighting. So it is not that hotels do one more than the other. It just depends on the hotel's priority. – Program Implementation Staff*

Value/Filling a Need in the Marketplace

The 3P program provides customized attention to customers including comprehensive engineering support and specific technology recommendations with estimated payback. The implementer has been working on this program since 2010 and fully understands the decision-making structure in hotels, and is able to navigate this efficiently. Hotel directors are so happy and familiar with the program that they will proactively call Willdan to ask about new measures each time they switch hotels.

Every property is so unique, and those larger properties really need that customized attention of an engineering team to help them. That is where I think they love the support that we give them. We come in and we are looking holistically at their electrical consumption. We are not even the guys that are going to sit there and say you should put in this light bulb, you should put in this chiller. We make recommendations on technology. We say you have a great opportunity for a lighting project. A lighting project typically has the payback of 2 to 5 years, depending on if we have to change out the fixture as well. And do you have lighting contractor that you typically work with that you would like us to work with more closely to develop a project for you? That way that lighting contractor can come in and give some samples, and say look how great this can look. Those are the barriers. The barriers are the hotel saying, no way our guests won't like LEDs. They are too blue. Well let's show you some samples so you can see how great the color temperatures are now. So the barrier is not the complicated structure once you understand it. It just certainly doesn't help as much as people would perceive that it would. I can't just go out there and go to Hilton and get implementation across 10 properties. It doesn't work that way. – Program Implementation Staff

Our program is targeted to large hotels square footage wise… We really focus on properties that have a baseline usage of at least 2 million kWh, because we are typically able to save anywhere from 10-30% of their electric baseline consumption. So if a property is only using 1 million kWh, for us to only save 100,000 kWh is not cost effective for the program. 100,000 kWh is a drop in the bucket for how large our goal is. So from that we really target the larger hotels. But to answer your question about chains vs. Mom & Pop, there is typically a big misconception with hotels. Just because it is a Marriott does not mean it is owned by Marriott. That is quite the contrary. Marriott doesn't own a single hotel. Hyatt does not own a single hotel. Those are management companies, and some Marriott's are managed by Marriott and some are franchises. So they pay a franchise fee to Marriott but they are managed by some other organization… So there are a lot of layers when it comes to hotels. So there might be a hotel that is owned by Host, managed by Marriott and essentially I have to work with all 3. I have to get buy in from the owner, the asset manager from Host; I have to get buy in from Marriott because they are the manager and operator of the hotel. Because even though Host owns it, they actually don't have operation rights to a lot of the equipment. That is Marriott. Then I have to get buy in from the actual employees on the property. I have to make sure the Director of Engineering and the GM of that property feel like that equipment is a good match for their building. So it really takes buy in from all 3 levels. – Program Implementation Staff

Coordination with Other Programs for Deeper Savings

Very limited referrals. In fact, the implementer reports that the SCE Account Rep will take the measures the implementer has identified in an audit and put those measures through Core instead of 3P.

Implementer Role

The implementer conducts the following:

- Marketing and Outreach,
- Audit & Project Feasibility Study,
- Technical Assistance,

- Customer Liaison,
- Installation Report,
- Verification,
- Collects customer feedback.

3.1.24 Cool Schools

Program Characteristics

IOU	SCE, SCE-13-TP-013
History	On-going since 2010, no major changes to program design
Target market	Downstream: Vertical market expertise; Private and public schools
Measures offered	• Lighting • Energy management system and controls • Evaporative pre-coolers on make-up air intakes • Chiller upgrading to models that contain variable speed drives; • Variable speed motors
Services offered	Energy audit Business support Turnkey installation
Measure Impact Type	Custom and Deemed
Value/Why it originated	Energy savings from hard-to-reach market
How it differs from Core	Free audit and technical expertise to help overcome budget and human resources constraints in schools
Same Measures in Core	Yes
What is innovative	None, strategy to reach market
Fuel Focus	Electric and gas

Delivery Overview

Implementer	Trane
Delivery Model	Meeting with customer to determine value and scope; Customer signs Program Agreement Form; Measure-specific audit to produce a project scoping document and a project feasibility study for SCE's review; On-site inspection through SCE's external reviewer; Customer signs Customer Agreement Form; Customer hires contractor for installation upon SCE's approval of project; Implementer submits Proof of Equipment and Installation Report for SCE's review; Verification through on-site inspection from SCE's external reviewer
Marketing approach	Direct: Marketing materials; program website; direct mail/email; media, personal meetings/phone-calls
Coordination with Core	Referrals to on-bill financing
Coordination w/ Other Programs	No
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Referrals
Customer Incentive	Rebate paid by SCE based on installed energy savings
Implementer Incentive	Performance-based per installed energy savings paid in three milestones

Installation	Trane or customer's contractor
Audit type	Measure-specific

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$2,247,746	5,960,197	228	0
Actual (b)	$1,712,926	2,190,819	589	-1,108
% Goal achieved	76%	37%	259%	#DIV/0!
Participants (c)	30			
Cost Effectiveness (d)	Net TRC: 0.67	Net PAC: 1.33		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

The Cool Schools Program is designed to gather gas and electric savings from hard-to-reach customers in the public school sector who typically lack financial and human resources to pursue energy efficient upgrades on their own. While most measures are available through SCE's Core portfolio, the program offers no-cost facility audits along with technical assistance to guide the customer through the upgrade and rebate process.

> *What the programs can influence and what we do influence is the timing…to get them to do it earlier and sooner and in an increased scope by providing the dollar amounts required to support that…. It is extremely influential, and we can get them to move on something that they were planning on waiting until the system died.* – Program Implementation Staff

Marketing Approach and Reliance on Local Government Partnerships

The program approaches prospective participants through a mix of implementer and IOU outreach. The implementer has a sales team in-house that promotes the program when selling Trane equipment to eligible customers via telemarketing or conferences. The implementer leverages IOU credibility, but does not rely on the SCE to generate leads or provide marketing materials. However, in some cases SCE's Account Representatives provide the implementer with project leads from interested schools.

The program does generally not coordinate with Local Government Partnerships (LGP). However, the implementer avoids marketing the program to customers in areas where LGPs offer overlapping program services.

Coordination with Other Programs

The program refers customers to on-bill financing, but does not coordinate with Core or other 3P programs otherwise.

Implementer Role

Third-party program implementation is a side-business for Trane. The company is one of the largest manufacturer of HVAC systems worldwide and offers contracting for HVAC services, and can therefore provide in-depth technical expertise.

The implementer conducts the following:

- Marketing & Outreach
- Audit & Project Feasibility Study
- Technical Assistance
- Customer Liaison
- Installation Report
- Verification

In addition, the implementer liaises closely with customers on a number of matters related to program implementation. For example, the implementer communicates any changes made throughout review processes, and facilitates meetings if there is need for further explanation. The implementer also coordinates with consultants hired by schools, and monitors that incentive payments from SCE are correct.

3.1.25 School Energy Efficiency Program (SEEP)

Program Characteristics

IOU	SCE, SCE-13-TP-018
History	On-going since 2010; Willdan worked as one of three contractors during the 2010-12 cycle; since 2013 Willdan is the sole implementer. Measure-focus has changed over time from T8 to other lighting options and fewer bulbs per fixture
Target market	Downstream: Vertical market expertise; K-12 schools: elementary schools, middle or junior high schools, senior high schools; public or private
Measures offered	• Fluorescent lighting replacements, including CFLs • Lighting motion and occupancy sensors
Services offered	Audit Direct Installation
Measure Impact Type	Deemed
Value/Why it originated	Energy savings from hard-to-reach market
How it differs from Core	One-stop shop experience, free audit and free direct-install measures
Same Measures in Core	Yes
What is innovative	None, strategy to reach market
Fuel Focus	Electric

Delivery Overview

Implementer	Willdan Energy Solutions
Delivery Model	Direct Install: Implementer and Account Rep meet customer to explain program offerings Customer signs Customer Authorization Form to enroll in the program; Lighting-specific audit by implementer upon which the customer signs; Authorization Summary form for SCE's review; Once SCE approves the project, the implementer installs program measures and submits the Project Completion Report for SCE's review and approval; Post inspection by implementer and utility for 65%-75% of projects; Customer feedback survey
Marketing approach	Direct: Account Representatives (Business Client Division) conduct bill-rate analysis to recommend districts with high savings potential; outreach by IOU and implementer
Coordination with Core	No
Coordination w/ Other Programs	No
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Identification of customers, verification
Customer Incentive	Free measures
Implementer Incentive	Paid set amount per installed measure
Installation	Implementer

Audit type	Measure-specific

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$5,958,450	20,345,353	294	0
Actual (b)	$4,473,850	16,962,032	3,176	-79,990
% Goal achieved	76%	83%	1080%	N/A
Participants (c)	351			
Cost Effectiveness (d)	Net TRC: 4.10	Net PAC: 4.10		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Note on Implementer

Before October 2013, Willdan implemented the program alongside two other companies. Implementer interviews were only conducted with Willdan, as the company has been the sole implementer since October 2013.

Program Value

Value/Filling a Need in the Marketplace

SCE's School Energy Efficiency Program is designed to gather electric savings from hard-to-reach customers in the K-12 public or private school sector who typically lack financial and human resources to pursue energy efficient upgrades on their own. The program helps overcome these barriers by offering no-cost facility audits and direct installation of no-cost lighting.

Marketing Approach and Reliance on Local Government Partnerships

SCE plays an important role in the identification of program participants. Account representatives in SCE's Business Client Division perform bill-rate analyses and recommend prospective participants to the implementer. The implementer and account reps work closely together in reaching out the customer. They typically approach the main decision-maker and leverage the utility's credibility as schools receive many upgrade recommendations from various contractors. The implementer also operates a program website and provides a program flyer.

The program does generally not coordinate with Local Government Partnerships (LGP).

Coordination with Other Programs

The program does not coordinate with Core offerings or other 3P programs.

Implementer Role

The implementer conducts the following:

- Outreach
- Lighting-specific audit
- Installation of measures
- Verification/QA: Implementer does a random inspection together with SCE of ~65% of projects
- Collects customer feedback in survey: customers fill out a customer feedback survey that yields in a response rate of ~60% and mostly positive feedback according to the implementer

3.1.26 Enhanced Retrocommissioning

Program Characteristics

IOU	SCE, SCE-13-TP-021
History	On-going in the current design since 2013; however, the program emerged in 2011 under the technology resource incubator program
Target market	Downstream: Horizontal market expertise; large commercial office spaces (>150k sf) with existing EMS
Measures offered	• Optimization of the building automation system, HVAC and other systems
Services offered	Various Retrocommissioning measures Fault Detection & Diagnosis software
Measure Impact Type	Custom and Deemed
Value/Why it originated	Market transformation; proof-of-concept to use data analytics for Retrocommissioning opportunities
How it differs from Core	Uses customer interval data
Same Measures in Core	Yes
What is innovative	Data analytics to improve targeting and monitoring of retro-commissionign opportunities
Fuel Focus	Electric

Delivery Overview

Implementer	Nexant
Delivery Model	Meeting with customer to explain program; Customer signs Program Agreement Form to release interval data; Data analytics using Retroficiency and on-site audit to produce a project feasibility study for SCE's review; Customer signs Customer Agreement Form; Customer hires contractor for installation upon SCE's approval of project; Implementer inspects site for verification and submits Proof of Equipment and Installation Report for SCE's review. As part of the verification, Nexant will attempt to identify Fault Protection and Diagnostics (FDD) or an appropriate analytic solution to enable continued monitoring.
Marketing approach	Direct: Leverage existing relationships
Coordination with Core	No
Coordination w/ Other Programs	No
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Interval data; engineering support
Customer Incentive	Rebate based on installed energy savings
Implementer Incentive	Performance-based per installed energy savings paid in three milestones
Installation	Contractor
Audit type	Measure-specific

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$1,390,739	4,950,000	540	0
Actual (b)	$921,964	892,055	37	0
% Goal achieved	66%	18%	7%	N/A
Participants (c)	3			
Cost Effectiveness (d)	Net TRC: 0.74	Net PAC: 0.78		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

The Enhanced Retrocommissioning (RCx) Program is designed to use analytics for remote building assessments to reduce some of the costs associated with site inspections. To identify energy savings through remote building assessments, the program uses interval data analysis software or installs a fault detection and diagnosis module. Both approaches monitor building performance and allow facility staff to identify energy savings potential from RCx measures over time, which otherwise do not have a long effective user life. The Enhanced RCx Program also has an education component, which helps customers identify the most suitable software option. From the implementer's perspective, program incentives play an important role in a customer's decision to move forward with retro-commissioning upgrades.

> *You can have simple data analytics that looks at interval data, just looking at the building's interval data. It will track the energy usage real time, month-to-month, day-to-day, and identify if you are on track or if you are drifting away and provide some sort of meter that your building is not as efficient as it should be at a high level. .. The better system ... is a fault detection and diagnostics because FDD is not just real time, but it is granular. And that is where you are integrating with specific equipment pieces, systems, sensors, actuators, dampers and valves, a variety of electrical equipment. It will give you very detailed information. – Program Implementation Staff*

> *RCx measures typically payback very fast. A lot of times they are...sometimes they require more work but the payback are in a matter of 1 or 2 years.. But when you add the incentives you bring that payback to an even shorter period. That helps the customer make the decision to move forward. So it is definitely influencing the customer, knowing they will get the incentives. And it makes the project lucrative compared to not having incentives. –Program Implementation Staff*

The program targets large commercial customers with facilities of 150,000 square foot or above who have already an up-to-date energy management system (EMS). Although the program targets larger facilities, the program has also worked with customers who have smaller facilities of only 75,000 square foot.

The implementer, Nexant, functions in this program as a resource and technology incubator. The company works with several analytic software providers throughout the U.S. and manages one of PG&E's analytics-enabled Retrocommissioning program. In comparison to analytics-enabled programs, Nexant does not receive interval data for the identification of customers. Instead, the customer must sign a data release form which enables the implementer to request data.

Marketing Approach and Reliance on Local Government Partnerships

Nexant markets the program through existing customer relationships and works closely with SCE's Account Representatives to reach out to potential program participants. The implementer also operates a program website[38] that provides program information and contact information for Nexant's Program Outreach Manager. Furthermore, the program draws on contractors or external consultants to identify and sign-up customers.

Nexant does not rely on Local Government Partnerships to market or implement the program.

Coordination with Other Programs

The program does not coordinate with SCE's Core programs or other 3P program implementers.

Implementer Role

The implementer conducts the following:

- Marketing,
- Remote Building Assessment,
- Monitor project implementation
- Site Inspection & Project Feasibility Study,
- Technical Assistance and Education,
- Verification/QA.

[38] http://www.enhancedrcx.com/

3.1.27 Program for Resource Efficiency in Private and Public Schools (PREPPS)

Program Characteristics

IOU	SCG, SCG3758
History	On-going since 2010; program first targeted private schools but expanded target market to include public schools program as of 2013. Program also broadened measure mix over time
Target market	Downstream: Vertical market expertise; Pre-K, K-12 schools, colleges, universities, technical/trade schools, public K-12 and few private institutions
Measures offered	• Pool Heaters • Pool Covers • Storage and Instantaneous Water Heaters • Pipe and Tank insulation • Steam Traps • Space Heating and Commercial Boilers • Natural Gas Food Service Equipment • Other customized measures as identified in field audits
Services offered	Energy audit Technical assistance Business support
Measure Impact Type	Deemed and Custom
Value/Why it originated	Energy savings in hard-to-reach markets
How it differs from Core	Marketing and technical assistance by implementer to reduce long lead time and decision-making processes
Same Measures in Core	Yes, except pool covers
What is innovative	None, strategy to reach market
Fuel Focus	Gas

Delivery Overview

Implementer	CLEAResult
Delivery Model	Phone screening and customer meeting Facility walk-through to conduct a project opportunity analysis; Project scope submitted to SCG for review and approval; Customer hires contractor for installation; Verification: 100% for custom 30% of deemed projects ; Customer survey by SCG
Marketing approach	Direct: Outreach by implementer, SCG's account reps and equipment vendor; marketing includes telemarketing, email blasts, sector specific events and presentations
Coordination with Core	No
Coordination w/ Other Programs	No
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Marketing
Customer Incentive	Rebate based on installed energy savings

Implementer Incentive	Performance-based per installed energy savings
Installation	Contractor
Audit type	Facility walk-through

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$1,780,368	0	0	703,788
Actual (b)	$1,198,660	0	0	297,461
% Goal achieved	67%	N/A	N/A	42%
Participants (c)	40			
Cost Effectiveness (d)	Net TRC: 0.71	Net PAC: 0.78		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

The 3P-PREPPS program is designed to gather gas savings from customers in the private and public school sector who typically lack financial and human resources to pursue energy efficient upgrades on their own. While most measures are available through SCG's Core portfolio, the program offers no-cost facility audits and technical assistance to guide schools through the upgrade process and help overcome these barriers. The program also sets out to speed up the implementation of energy efficient equipment in a sector that is known for long decision-making processes. To do so, the program utilizes the implementer's sector experience as well as a 20% bonus for schools that commit and install quickly.

The program implementer, CLEAResult, also implements PG&E's School Energy Efficiency Program and is experienced in the school sector. According to the IOU, this helps particularly private schools who often do not have an account executive, and would thus not hear about available rebates otherwise. The program expanded its target market to public schools in 2013, which made up the majority of program participants during the 2013-14 cycle. The implementer explained high participation from public schools was due to increased marketing in this new sector and the availability of Prop 39 funds.

This program is SCG's only 3P program with a commercial target market.

Marketing Approach and Reliance on Local Government Partnerships

The implementer, SCG's account representatives and equipment vendors market the program to prospective participants. The implementer's marketing campaigns include telemarketing, emailing, and networking through industry events and associations.

The program does not coordinate with Local Government Partnerships.

Coordination with Other Programs

The program does not coordinate with Core or other 3P programs. IOU staff does not see the need for cross-promotion with SCG's Core programs, but highlights that measures related to thermal solar might be a good add-on to 3P program offerings in the future.

Implementer Role

The implementer conducts the following:

- Marketing,
- Phone screening,
- Walk-through site inspection and project opportunity analysis,
- Liaison with contractors / equipment vendors who install measures,
- Verification/QA: Implementer does a random inspection of 30% of deemed projects. Implementer inspects 100% of custom projects.

3.1.28 SW – COM - Calculated Incentives-RCx

Program Characteristics

IOU	SDG&E, SDGE3221
History	On-going since 2006 in its current design; originated as a pilot during 2004-05. The implementer PECI was acquired by CLEAResult.
Target market	Downstream: Vertical market expertise; Commercial buildings larger than 50,000 sf with a central plant and direct digital controls (DDC)
Measures offered	Optimization of heating and cooling, lighting, HVAC, control sensors calibration
Services offered	A free, no-obligation facility screening; Free customer engineering analysis; Financial incentives for eligible Retrocommissioning measure
Measure Impact Type	Custom
Value/Why it originated	Innovation, proof-of-concept, complex calculations require implementer's expertise
How it differs from Core	Use trend data to identify Retrocommissioning opportunities; technical expertise, customer education, and incentives to enable RCx.
Same Measures in Core	No Retrocommissioning measures in Core
What is innovative	Smart meter data analytics to identify savings opportunities
Fuel Focus	Electric and Gas

Delivery Overview

Implementer	CLEAResult (Previously: Portland Energy Conservation Inc. - PECI)
Delivery Model	Field manager explains the program to prospective participants; Initial screening by field manager; If project deemed feasible, customer commits (OPA) to implement measures that payback within 2 years up to cap; One of ten RCx providers (pre-qualified) conducts custom engineering study including interviews with building operators, collection of trend data, functional tests, site visits (3-4 months) to develop Master List of Findings; Implementer reviews and approves, customer determines final SoW; Customer hires contractors for implementation of RCx measures, in some cases hires RCx provider for more technical assistance (~6 months); Upon installation, implementer, and SDG&E verify savings based on RCx providers installation report and implementation summary table, both based on post-install trend data
Marketing approach	Direct & Indirect through CLEAResult staff, pre-qualified engineering providers, SDG&E, and Building Owner and Management Association (BOMA), word-of-mouth
Coordination with Core	Yes, referrals to Core.
Coordination w/ Other Programs	Overlap with Healthcare Energy Efficiency Program and Lodging Energy Efficiency Program (both non-resource programs in which Willdan provides audit services and rebates are available under Core)
Work with LGPs	Yes
Reliance on LGPs	Use LGPs to identify buildings with high savings opportunities

IOU Support	Referrals
Customer Incentive	Free data analytics (program pays provider), rebate for measures with more than 2-years payback period (one-fifth of projects only)
Implementer Incentive	Performance-based per installed energy savings; RCx contractor receives flat investigation fee ($0.06 per sq. ft.) plus performance-based fee based on savings
Installation	Customer hires contractor
Audit type	Trend and interval data; onsite inspection

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$3,300,543	8,779,000	249	95,628
Actual (b)	$3,181,966	3,572,300	89	303,974
% Goal achieved	96%	41%	36%	318%
Participants (c)	10			
Cost Effectiveness (d)	Net TRC: 1.57	Net PAC: 1.74		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

Program Value

Value/Filling a Need in the Marketplace

The San Diego Retrocommissioning (RCx) Program is designed to gather energy savings from customers who lack the knowledge to analyze trend data and identify RCx upgrades themselves. The program offers customer education and a no-cost engineering study to overcome high costs associated with the assessment. Customers cannot get incentives for RCx upgrades through SDG&E's Core portfolio. The program targets customers with facilities of 50,000 square foot or more that have a digital control system.

> *I don't think that a lot of customers would participate if there wasn't that walk through with them. These customers are our large customers. They have account executives so they are used to getting a little bit more handholding with their projects. I think a lot of times the issues and the potential savings are invisible until someone actually points them out.- IOU Program Staff*

Marketing Approach and Reliance on Local Government Partnerships

The implementer receives project leads from the ten program-qualified RCx providers or SDG&E's Account Executives. In addition, interested customers may have heard about the program through other building

operators or the program's Field Representative who has chaired the Building Owners and Managers Association Sustainability Committee in the past. The implementer operates a program website[39].

The program coordinates with Local Government Partnerships to identify suitable candidates for RCx upgrades, but does not necessarily rely on them for marketing and outreach.

Coordination with Other Programs

The implementer coordinates closely with the customer's SDG&E account representative if the program identifies measures that are not subject to program offerings. Other 3P programs offer RCx as an option, but the programs do not generally coordinate.

Implementer Role

CLEAResult acquired PECI in 2014 and manages the program across SDG&E's service territory. The implementer establishes the savings goals for the program based on SDG&E's provided budget. The program implementation team, which includes a program manager, a field representative, an administrative coordinator as well as engineers, has the following responsibilities in the program:

- Coordination of program contractors
- Marketing
- Customer screening
- Technical review and approval of contractors' recommended measures savings estimates (technical review memo)
- Verification/QA: Implementer does a random inspection of 25% of projects (sub-contractors verify 100% of projects)

Moving forward, the implementer further plans to collect customer feedback about their experiences with the program.

RCx Provider Role

The program works with 10 qualified RCx providers who have a more extensive role in this program compared to other RCx program. They responsibilities include the following:

- Conduct custom engineering study to identify recommended measures,
- Provide additional technical assistance for the customer,
- Collect post installation trend-data to calculate savings.

[39] http://www.sandiegorcx.com/

3.1.29 SW – COM - Deemed Incentives-HVAC Commercial

Program Characteristics

IOU	SDG&E, SDGE3224
History	On-going since 2006, began as a midstream program to improve the installation quality from HVAC contractors in residential and commercial spaces. In 2010, commercial became a stand-alone program. The program since runs as a hybrid equipment model that incorporates several subprograms: The Upstream Commercial Equipment Incentive Program available to distributors, the Local Area Downstream Midstream Equipment Incentive Program, the Statewide Quality Maintenance Program, the Quasi-Installation Program, the Lodging Hotel Program, and the Home Area Network Program
Target market	Downstream, Midstream and Upstream: Horizontal market expertise; small- and medium size businesses with HVAC system <50 tons, HVAC distributors
Measures offered	• Low or no-cost HVAC diagnostic tune-ups • Duct sealing and economizer restoration • Incentives for the purchase of new HVAC equipment
Services offered	Technical assistance with decision-making tools & program-vetted contractors
Measure Impact Type	Deemed
Value/Why it originated	Market transformation; energy savings from HVAC measures in hard-to-reach markets
How it differs from Core	More technical services and hand-holding; more measures and targets contractors and customers
Same Measures in Core	Some but not all
What is innovative	None, strategy to reach market
Fuel Focus	Electric

Delivery Overview

Implementer	Conservation Services Group
Delivery Model	Customer (or contractor) enrolls through website (reservation request form); Implementer sends incentive voucher for envisaged upgrade; Customer activates voucher and selects a participating contractor; Customer or contractor complete participation agreement and incentive application Implementer inspects the installation
Marketing approach	Direct & Indirect: website, limited mailings, industry events
Coordination with Core	Yes, works with HVAC contractors to become TradePro Alliance member so that they can market other SDG&E rebates
Coordination w/ Other Programs	Yes, if tune-up reveals opportunities for other programs
Work with LGPs	No
Reliance on LGPs	No
IOU Support	Referrals from Account Executives; Engineering; Emerging Technologies team
Customer Incentive	Customer or contractor (in downstream program, customer chooses)
Implementer Incentive	Pay for performance, paid for kWh

Installation	Contractor
Audit type	None

Program Performance

	Spending	kWh	kW	Therm
Goal (a)	$7,649,255†	3,960,939	1,379	-4,350
Actual (b)	$7,061,171	13,913,363	6,005	1,378
% Goal achieved	92%	351%	435%	-32%
Participants (c)	1,427			
Cost Effectiveness (d)	Net TRC: 1.76	Net PAC: 1.26		

(a) Forecasts from IOU Monthly Energy Efficiency Program Report (December 2014) covering the 2013-14 program cycle.
(b) CPUC Program Database, covering the 2013-14 program cycle.
(c) The number of unique service account IDs in the CPUC Program Database covering 2013-14 claim records.
(d) Total Resource Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and TRC Costs with IOU reported values for PY2013 and PY2014. Program Administration Costs take into account the program-level Net Electric Benefits, Net Gas Benefits and PAC Costs with IOU reported values for PY2013 and PY2014 (Data Source: EEData_2013Q1-2014Q4_Chart_v6.xls).

†Program manager indicated that program received additional funds from original budget as original goals were exceeded.

Program Value

Value/Filling a Need in the Marketplace

The SW-COM-Deemed Incentives-HVAC Commercial (HVAC Commercial) Program is a statewide effort to meet the HVAC deliverables in the California Long Term Energy Efficiency Strategic Plan. HVAC Commercial is unique in the 3P portfolio as it consists of downstream, midstream and upstream sub-programs that are designed to transform California's HVAC market, and generate energy savings or demand reduction from small- and medium size facilities.

The sub-program elements include:

- The Local Area Equipment Program provides incentives for customers (downstream) and contractors (midstream) to upgrade HVAC systems.
- The Upstream Equipment Program provides stocking and sales incentives for manufacturers (for measures that the Local Area Equipment Program does not utilize)
- The Local Area Tune-Up Program offers a one-time, direct install HVAC tune-up at no or low cost to the customer. The tune-ups are based on the ANSI/ASHRAE/ACCA 180 standard. Midstream, the implementer trains and manages a group of contractors who provide the tune-up services.
- The Quality Maintenance Program is a statewide effort that provides incentives to support 3-year maintenance agreements and, thus, regular tune-ups. The tune-ups are based on the ANSI/ASHRAE/ACCA 180 standard. Midstream, the implementer trains and manages a group of contractors who provide the tune-up services.
- The Quality Installation Program provides incentives to customers and contractors to meet industry standards (ANSI/ASHRAE/ACCA) when purchasing new commercial HVAC equipment.

- The Lodging Program provides cash incentives to hotels and motels for retiring inefficient Packaged Terminal Air Conditioners (PTACs) and Packaged Terminal Heat Pumps (PTHPs) and replacing them with premium efficiency units.

- SDG&E's Home Area Network Program assists customers with connecting and leveraging smart meter devices. Under this program, HVAC Commercial installs smart thermostats in commercial facilities.

Most measures offered through the program are typically not available through SDG&E's Core program. Downstream, the program targets small- and medium size businesses with HVAC systems under 63.3 tons. Program participants commonly include restaurants, retail facilities, schools, hotels, motels, and churches. These customers typically lack the knowledge and financial resources for HVAC maintenance and upgrades. The program provides these customers with incentives to purchase high efficiency equipment or optimize existing HVAC systems.

> *When it comes to maintenance, if you are lucky they are changing their filters. But, beyond that they really think these are plug and play, and don't really have the infrastructure or the education to properly maintain those units. So that is the biggest barrier – Program Implementation Staff*

Mid- and upstream, the program provides incentives to reduce the costs of efficient equipment at the distributor level.

> *Another barrier that people talk about is the fact that often times the licensed contractors are competing against people who either aren't licensed or may be, perhaps, low cost licensed contractors. So the market place offers a wide range of opportunities for maintenance. So a customer can get a maintenance bid to change the filters and blow off any dust from the roof top for $100 a year for their HVAC unit, or they can go with a regular quarterly maintenance for $1500. So they are often going to make that decision based on initial cost, not on lifetime cost or all the other benefits… comfort, safety, efficiency, performance. – Program Implementation Staff*

From the IOU's perspective, this program requires 3P implementation because the design is very labor intensive as it includes contractor training and technical engineers.

Marketing Approach and Reliance on Local Government Partnerships

The implementer markets the program to customers, as well as participating contractors, through industry associations and limited direct mailings. The implementer also operates a program website.

Most commonly, participating contractors identify and recruit program participants, but customers may also hear about the program from SDG&E's account executives, engineers or SDG&E marketing campaigns. SDG&E marketing focused on thermostats and included mailers in coordination with multimedia, TV ads, calling, post cards, and e-mails.

The program does not coordinate with or rely on Local Government Partnerships.

Coordination with Other Programs

There is some coordination between HVAC Commercial and SDG&E's Core offerings. For example, the implementer works with program contractors to become part of SDG&E's TradePro Alliance, which enables contractors to market any of SDG&E's rebates. In addition, program contractors may refer customers to other programs if the HVAC tune-up identifies potential for a deeper retrofit of measures not covered by the program, or if HVAC units are beyond the program's target of 63.3 tons.

For example, the HVAC Commercial Program coordinated with SD&GE's Retrocommissioning Program in the past when customers with larger facilities were interested in the program.

Implementer Role

The implementer offers the program services and has the following key responsibilities:

- Marketing & project eligibility screening
- Contractor recruitment and training
- Work-flow management
- Engineering support for contractors
- Verification/QA: the implementer inspects 25% of the tune-ups and 100% of hotel equipment

Contractor Role

Trained and vetted contractors play an important role in the implementation of the HVAC Commercial Program. Their main responsibility is the measure installation, but contractors are commonly involved in customer identification, recruitment and enrollment.

While any licensed contractor can apply for equipment incentives, the program has extensive requirements for contractors who conduct tune-ups. These include:

- Contractor must be licensed in California
- Technicians must hold an EPA universal refrigerant certifications or refrigerant handling certification
- Must have B rating on BBB or provide customer referrals
- Technicians must have at least two years of experience and professional training
- Technicians must complete one-day classroom training and several rooftop trainings and observations

The program currently works with approximately 20 tune-up contractors as only few can fulfill all program requirements.

3.1.30 CLOSED – Monitoring-Based Persistence Commissiong (MBPCx) Program

IOU	PG&E, PGE210110
Program Description	Enovity's MBPCx Program featured a monitoring-based approach to Retrocommissioning with a strong focus on achieving persistent measure savings and extended measure life (up to 8 years). The MBPCx Program began in 2009, filling a gap in the marketplace brought on by the closure of several other RCx programs around 2006, and existed during a time when RCx programs were still emerging. The program targeted large commercial and institutional buildings with no-cost technical services and cash incentives for measures such as HVAC equipment retrofits, lighting control adjustments, and business control system upgrades.
Date Started	2009
Date Closed	December 2014. The MPBCx Program contract was allowed to expire in December 2014, and the existing project pipeline was moved to the Core MBPCx Program in order to fulfill customer commitments. The 3P implementer, Enovity, was notified by PG&E in September 2014 about the impending end of the program.
Reason for Closure	3P MPBCx program was not renewed for 2015 due to revival of the MBPCx Core Program in 2013 and an oversubscribed project pipeline. **Pipeline Management/Risk from Oversubscription.** The program was heavily over-subscribed in 2013-14, posing a risk for PG&E who would have been committing to incentives far exceeding the program budget. In prior years, Enovity was granted change orders to increase the program budget fairly quickly as long as they signed on new customers, and the program doubled over the 2009-10 and 2011-12 cycles. Enovity continued to operate under this assumption in the 2013-14 program cycle. However, after PG&E's reorganization in July 2014, with new management in place, Enovity was told that change orders would not be granted as freely going forward. **Unspoken Changes Resulting from the PG&E Reorganization.** Insufficient communication between parties post-reorganization likely contributed to the pipeline management issue. Unspoken changes from earlier program cycles were not thoroughly discussed or communicated, leading to misunderstandings between the parties. As another example, Enovity's program savings tended towards kWh, whereas PG&E preferred more peak kW savings. Although Enovity did adjust the program to capture more kW savings at PG&E's request, PG&E still felt the 3P MPBCx Program was quite risky, and it made sense to retire with the Core Program already addressing the target market. **Duplication with Core Program.** The 3P MBPCx program was highly successful during the two years (2011-12) the equivalent Core MBPCx Program was dormant. When the Core Program returned in 2013, the programs were duplicative and PG&E felt there was no need to expose themselves to additional risk by having the 3P program open. Once Enovity received notice their program contract was going to expire, their projects were handed off to the Core program for completion and to claim savings.

3.1.31 CLOSED – Small Business Commercial Comprehensive Refrigeration (SCCR) Program – "CoolBiz Program"

IOU	PG&E, PGE210116
Program Description	Also known as the Cool Biz Program, DNV-GL's (formerly KEMA) Small Commercial Comprehensive Refrigeration (SCCR) Program was a deemed, direct install program that offered incentives for retrofits of energy efficient refrigeration, lighting and controls to small- and medium-sized commercial businesses. Since 2006, the program had operated as a very successful high-volume program that helped customers with limited upfront capital install energy efficiency measures.
Date Started	2006
Date Closed	April 2014
Reason for Closure	The main reason for closure was the implementer's inability to recover program costs. DNV-GL would have requested to close the program if PG&E had not. **Reduction in Claimable Savings.** The program had been operating successfully using a pre-approved modified calculator to measure savings. As such, DNV-GL did not have to go through the full custom engineering review process – they were allowed to use the calculator and tailor measures to specific customers to maximize savings. According to the IOU, with the advent of secondary review PG&E's engineering team sent guidance out stating there needed to be a clear distinction between calculated and deemed programs – programs had to be one or the other. Because SCCR served customers that tended to receive deemed measures, the IOU said the implementer could not go calculated as that would not lend itself to a small business program – the program had to go deemed. So, DNV-GL lost the ability to utilize its pre-approved claimable savings calculator. As such, incentive payments dropped substantially and the implementer could no longer afford to keep the program open. **Market Saturation.** The program had already served thousands of customers since 2006. In the 2013-14 cycle, the implementer reported greater difficulty (and greater expense) in recruiting customers, as their prior means of recruitment were no longer as successful. With lower incentive payments, it was much harder to meet costs with the same businesses targeted previously. **Increase in Customer Copays.** Customer copays also increased signifigantly to offset higher implementation costs this cycle. As such, hampered customer recruitment was likely due to a combination of market satuation and higher costs to participate. **Competition from New Programs.** The implementer reported that they had issues with coordination – new programs were coming in which excluded them from serving customer groups they had served in the past. The IOU reported that this particular program was designed to focus on comprehensive measures, but once those measures became deemed, the program faced must more competition from other deemed programs that offered similar measures.

3.1.32 CLOSED – Energy Efficiency Parking Garage Program

IOU	PG&E, PGE210117
Program Description	The Energy Efficient Parking Garage Program was a performance-based custom program targeting parking garages, a niche market sector overlooked by existing IOU programs. With simple replacement measures, the program hoped to overcome the split incentive market barrier characteristic of parking garages, which are typically owned by one party and managed by another. Initiated in 2010, the program largely installed T8's, some LEDs, and some lighting controls. The Implementer, EFM Solutions, partnered with lighting vendor American Power Solutions who recruited customers and completed the install. EFM was responsible for payment of incentives and reporting to PG&E. The program was successful in achieving a good TRC ratio, but overall savings was lower than expected.
Date Started	2010
Date Closed	Q3 2014 (per Advice Letter). The program ceased recruiting customers in 2014 but was allowed to complete its committed pipeline, which ran through 2015.
Reason for Closure	Various factors related to the program's operation as a custom program in 2013-14 led to its inability to develop a robust pipeline. Although the program maintained a good TRC ratio, overall savings goals were lower than expected. **Custom Approach Was Not Cost Effective Given the Existing Program Design.** The program originally operated as a quasi-deemed custom program until 2012, when PG&E instructed the program to go custom for the 2013-14 cycle. As such, what was initially designed to be a quick and simple replacement program became quite time-intensive, onerous, and costly for the implementer. In the end, PG&E felt resources were better allocated to other programs. • **Custom Program Was Not Cost-Effective for the Vendor, Who Could Earn More with Simpler Deemed Programs.** The implementer partnered with a sales vendor, American Power Solutions, who was used to selling projects quickly. The added custom program requirements of having to document savings was an additional burden that the vendor was not keen on managing when they had many other programs that did not have to go through this rigorous process. A limited program budget made pursuing programmatic changes unattractive. • **Constantly Changing Incentive Methodology Hampered Customer Recruitment.** A constantly moving incentive target made it difficult to secure customer commitments. Once a project was presented to PG&E for approval, savings methodology would change and the implementer would have to go back to customers to resell the project at a lower incentive rate. A consistent incentive rate throughout the entire program cycle would have lent more consistency and credibility to the program and implementer. • **Changing Dispositions with Title 24.** When Title 24 emerged as the new baseline, neither the implementer nor PG&E really knew how to deal with the changes, and it is still unclear which of the program's measures would qualify now. This, combined with aforementioned challenges, led to the program's eventual retirement.

3.1.33 CLOSED – Monitoring Based Commissioning (MBCx) Program

IOU	PG&E, PGE210120
Program Description	Implemented by EnerNOC, the MBCx Program targeted commercial buildings (largely offices) for the installation of software to remotely monitor and automate energy saving measure opportunities. The automated process relies on data from software installed at often hundreds of points in a building, which an engineer can retrocommission much more quickly is subsequently analyzed by an engineer who can retro-commission more quickly (than by using spreadsheets).
Date Started	2010
Date Closed	2014
Reason for Closure	The Program retired because it could not generate a robust pipeline and was not delivering savings as quickly as expected. Reasons for underperformance included: **Customer Concern Over Technology.** The software required EnerNOC to physically install monitoring equipment at up to hundreds of points in a building, which caused concern to customers who feared either interference with existing building systems and/or making themselves more vulnerable to hacking. **Marketplace Still Maturing.** The MBCx software offered in the program used cloud-based analytics that had to be integrated with EMS hardware on customer sites. The technology was not only emerging but disruptive, and the marketplace may have been slow to accept such sophisicated building analytics. With ever-increasing customer awareness of big data and cloud computing, this phenonmenon may diminish over time. **Challenging Economic Environment Post 2008 Financial Crisis.** From the implementer's perspective, MBCx would identify measures quickly but customers were slow to implement. Contractors were also slow to mobilize. The implementer believes that commercial businesses still had not fully recovered from the 2008 economic crisis and were reluctant to spend on energy efficiency improvements, some of which cost thousands of dollars. **Challenging Regulatory Environment.** There was considerable starting and stopping as a result of uncertain project schedules and unclear program deadlines. These delays in project progress caused customers to demobilize and then remobilize staff/contractors, all of which increased project risk for the customer. Perhaps earlier involvement by the IOU or PUC Staff, and fewer delays in the secondary review process, would have helped to mitigate this phenomenon. **Program Design Challenges.** The MBCx Program followed a very complex process, both with paperwork and to meet rigorous M&V requirements. • **Paperwork Burden.** Enrolling in the MBCx Program required a significant amount of paperwork, which slowed program adoption, slowed program approval time, and reduced customer engagement levels. PG&E did work with EnerNOC to streamline the process, but additional refinement is recommended to further reduce costs and increase ease of participation. • **Split Incentive Challenge.** Because commercial buildings contain multiple tenants, instead of obtaining just one signature from a building owner/property manager,

EnerNOC had to duplicate program documentation for each tenant per building. This was an additional administrative burden adding complexity to the program. One recommendation going forward is to encourage owners/property managers to include a clause in their tenant agreements giving them authority to act on the tenant's behalf to coordinate with PG&E and participate in incentive/rebate programs for equipment installed at the building level. This would make the enrollment, approval, and payment process quicker and much more streamlined.

3.1.34 CLOSED – Ozone Laundry Energy Efficiency Program

IOU	PG&E, PGE210124
Program Description	Implemented by Willdan, the Ozone Laundry Energy Efficiency Program was designed to capture energy savings from laundry facilities, a sector thought to have limited options for saving energy. The program offered a single measure – ozone laundry – that eliminated the need for hot water to launder (thereby saving energy used for heating water). The program served customers with laundry equipment, including hospitality, nursing homes, industrial laundry facilities, and other commercial segments.
Date Started	2010
Date Closed	Early 2014
Reason for Closure	The program was unable to develop a robust pipeline and could not meet its energy savings goals, and the program was closed at the implementer's request. Key reasons for this included: **Same Measures Offered as Deemed Rebates Elsewhere.** Both PG&E's Commercial Deemed Program (Core Program) and Healthcare Energy Efficiency Program (HEEP) offered the exact same measure but as deemed rebates. The customized process was much more onerous and took twice as long than the deemed programs; as such, contractors were more inclined to recruit for the more efficient deemed programs. Had Willdan been allowed to operate as a deemed program, the implementer believes they would have had more success as the program had operated well in earlier years. **Other Reasons Program Could not Develop Robust Pipeline:** • **Market Saturation.** The program may have already reached the easiest to target customers in 2010-12. Projects in 2013 were much smaller than anticipated. • **Ozone's Damaged Reputation**. Before the introduction of the program, malfunctions with ozone technology negatively affected its reputation and may stil linger today, causing customers to be wary of the technology. • **Decision Maker Unclear.** The program had difficulties accessing the right decision makers; oftentimes facility managers lacked authority to authorize energy efficiency upgrades. • **Technology Vendors Left California**. According to the IOU, several vendors who played a role in marketing and installing the ozone laundry measures ceased operations in California, reducing the program's recruitment efforts.

3.1.35 CLOSED – California Preschool Energy Efficiency Program

IOU	PG&E, PGE210125
Program Description	Run by a community development and financial non-profit called the Low Income Investment Fund (LIIF), the California Preschool Energy Efficiency Program (CPEEP) addressed the childcare/daycare and preschool market excluded from the IOUs K-12 schools program. The program offered a way for childcare centers and preschools on very limited budgets to make energy efficiency improvements at no cost. Focused largely on de-lamping (and some HVAC), the program was very popular with customers – serving over 2,000 facilities since 2006. In its earlier form, the program required copays from participants; copays were subsequently eliminated due to nonpayment (and those that did pay were refunded). LIIF hired Willdan to complete some of the data analysis for the program.
Date Started	The program originated in 2006 at PG&E, SCE, and SDG&E, but in the 2013-14 cycle operated only in PG&E territory.
Date Closed	LIIF stopped accepting applications for the program as of September 1, 2013.
Reason for Closure	An inability to cover program costs caused the program to close. **Not Cost Effective as a Custom Program/Loss of Cross-Subsidy from SCE Deemed Program from Prior Year.** When the program began in 2006, LIIF was compensated by PG&E on different basis than the other utilities. Whereas PG&E compensated the implementer on a kWh basis, SCE and SDG&E compensated LIIF by measure. When the SCE program ended in December 2012, LIIF could no longer operate the PG&E program without losing money, and was shut down. Had LIIF been compensated by PG&E on a measure basis, the program could likely have met costs. **New T12 to T8 Lighting Code Change Drastically Affected Savings.** Approximately 80% of CPEEP's savings had been from T12 to T8 lighting replacements, so when lighting baselines changed from T12's to T8's, program savings drastically declined. LIIF and PG&E discussed options for keeping the program open, but it was determined that one possible solution – customer copays – were not feasible in this niche market, as demonstrated by earlier attempts. As such, LIIF knew they would be unable to recoup program costs, and the program retired in 2013.

3.1.36 CLOSED – Enhanced Automation Initiative

IOU	PG&E, PGE21019
Program Description	The Enhanced Automation Initiative began in 2004 to advance the installation of building automation systems and EMS technology, which at the time was rather expensive to install and not well understood. The program offered incentives, technical assistance and training on how to use enhanced lighting, HVAC, and other system controls to get the most out of existing EMS services and handle demand response. Implemented by DNV-GL (formerly KEMA), this custom program targeted large commercial and institutional customers (with demand exceeding 500 kW peak or 100,000 square feet in size) and offered implementations, replacements, retrofits, and upgrades.
Date Started	2004
Date Closed	The program is technically still open, but solely to meet its obligations with the remaining pipeline. New applications are not being accepted. The program is expected to officially close once all pipeline projects are completed.
Reason for Closure	The program was not achieving its savings goals in the desired timeline for the 2013-14 cycle. Reasons for this include: **Implementer Could Not Adequately Recoup Costs.** For the reasons below, DNV-GL would likely have petitioned to close the program themselves, if PG&E had not initiated. • **Extensive Engineering Rigor Required.** As a custom program, the implementer was required to complete an extensive upfront engineering analysis for proposed projects prior to customer commitment, costing a considerable amount without any assurity that the customer would sign a contract and move forward with a project. Time & Materials (T&M) costs for this engineering review, as well as for marketing and outreach, made the program not cost-effective for DNV-GL, especially since incentives payment per kWh had been steadily declining (see next bullet). In order for the program to have been cost effective as a custom program, the implementer would have required a larger T&M budget. • **Reduction in Claimable Savings Due to Policy Changes and Title 24.** Incentive payments have dropped continuously over time, resulting in the implementer earning less per measure than in the past (lighting measures dropped from 8 cents to 5 cents per kWh saved). When Title 24 passed, some measures no longer qualified altogether. • **Program Was Very Silo-ed, Limiting The Ability to Capture More Energy Savings.** The implementer suggested that if the program could have been expanded to include Retrocommissioning measures, it would likely have been more successful. Being limited to very specific measures – and being required to go through extensive engineering rigor – made the program not cost effective. **Technology Has Advanced Such That There Are Other Alternatives To the IOU Program.** Since the program began in 2004, control technology that improves EMS has advanced significantly and is better understood by customers, so the program is no longer the only option to improve controls.

3.1.37 CLOSED – Energy Efficiency for Entertainment Centers Program

IOU	SCE, SCE-13-TP-017
Program Description	The implementer, FESS Energy, runs several other programs for SCE in addition to the Energy Efficiency for Entertainment Centers Program. The program offered free installation and retrofits of HVAC controls, lighting, and similar measures in movie theatres, bowling alleys, recreation centers and restaurants. Notably, the program offered a tiered pricing structure for HVAC measures that made the equipment quite cost-effective, and required that customers implement HVAC measures in order to receive lighting upgrades. The primary HVAC measure installed by the program was demand control ventilation (DCV), a technology most customers tended to confuse with demand response, and were thus concerned about inference with occupant comfort. FESS Energy stepped in to properly educate customers about the technology and the opportunity. The program began with a copay that was eliminated after 3 months (and refunded to those who had paid).
Date Started	FESS assumed the program in January 2014; it was transferred from another implementer mid-cycle.
Date Closed	2014. SCE regrets the program's closure and has encouraged FESS Energy to bid the program into the IDEEA 365 solicitation.
Reason for Closure	**Short Implementation and Decision Time Frames.** SCE and FESS Energy had less than a year to implement the program, and it ran only a few months before the March 2014 window to file for closure approached. At the time, the program appeared unsuccessful and SCE did file for closure. However, following a program redesign also around that time that eliminated the customer copay, customer interest suddenly picked up, and by October/November 2014 the program was fully subscribed and highly cost-effective. By this time the process to close the program had already been set in motion and ultimately approved, and petitioning to revive it was considered too onerous to pursue. SCE has therefore encouraged FESS Energy to bid the program into the IDEEA 365 solicitation in the hopes of bringing the program back. **Program Funds Exhausted Quickly.** Once the program started to pick up, program funds ran out very quickly, and the implementer noted that some national chains with longer decision-making processes could not act soon enough to participate. If additional funds could have been reallocated to the program, many more customers could have been served. **Rigid Program Scope Rules.** Oftentimes, the implementer would identify good candidates for the program, only to be told that that particular business type (based on NAICS code) should be served by another program. Assembly rooms are one example – FESS Energy was allowed to pursue them if they were a public assembly, but not if the assembly room was at a school. Workpapers had not been developed with enough granularity to make distinctions between these other types of buildings. As such, time and effort spent identifying good candidates was in essence wasted on customers and measures not necessarily implemented. SCE has encouraged FESS Energy, for the IDEEA 365 solicitation, to expand the scope of the program from purely entertainment centers to any customer who had variable occupancy (e.g., convention halls, meeting rooms in hotels, banquet halls, etc).

3.1.38 CLOSED – 3P-SaveGas Program

IOU	SCG, SCG3766
Program Description	Through the SaveGas Program, EDC Technologies deploys its proprietary hot water controller technology that monitors hot water usage in hotels, motels, senior care facilities, and buildings with onsite kitchen and laundry facilities. The technology is virtual and installed on cell phones. Installation is free and customers have an option to purchase monthly monitoring services. According to EDC, it has been very successful nationwide, notably serving about 50% of the hot water market in Hawaii and 3% in California.
Date Started	2007
Date Closed	2014
Reason for Closure	The implementer filed to end the program in 2014 because the requirements to participate were too costly. **Program Requirements too Onerous for Nimble Program Design.** Unlike many traditional IOU programs that replace or retrofit large equipment, EDC's business model is very nimble – it uses virtual software to enable automatic monitoring of hot water control systems. The marginal cost of installing each new technology is quite low and the savings potential very high. The model has worked very well on the open market, as demonstrated by EDC's success across the nation. Under the utility program framework, EDC was required to meet various administrative requirements, which extended sales times that typically take a few months to one year. The 2013-14 cycle required EDC to register for a contractor's license and DBE certification – processes that ultimately required EDC to form an entirely separate entity just to conform to these requirements. All of these regulatory burdens, as well as having to justify savings through workpapers, participation in the program too costly. EDC has decided to simply sell their technology on the open market. **Market Saturation.** The IOU said the implementer expressed their desire to close the program because they believed the Southern California market was already saturated. However, this issue was not raised in the interview with the implementer.

4. In-Depth Interview Guides

4.1 IOU Program Staff Interview Guide

Introduction

Thank you for making time for this discussion. As you know, Opinion Dynamics is conducting a process evaluation of California's Third-Party programs on behalf of the CPUC. We have already reviewed secondary sources including program implementation plans and monthly reports filed with the commission. The purpose of today's call is to learn more about the program you manage, why it is needed in comparison to Core programs and get your perspective on how the program is performing and why. We will use this information to help us select 10 programs for more detailed case studies.

Do you mind if I record our discussion for the purpose of note-taking?

Program Manager Role

1. Can you briefly describe your role at <IOU> with respect to the 3rd party non-residential programs?
2. Were you involved in selecting programs for implementation in the 2013-14 program cycle? [IF YES, ASK PORTFOLIO DESIGN QUESTIONS]

Program History & Program Value

[READ IF MORE THAN 1 PROGRAM] I would like to talk about a few program specific topics. Since you manage more than one Third-Party program I suggest we cover the next section program by program. Let's start with <PROGRAM 1>.

[REPEAT SECTION FOR EACH PROGRAM MANAGED BY THE RESONDENT]

3. Can you please explain when and why the program originated?
4. How was the program budget determined?
5. How were the program's savings estimates determined?
6. What is the target market for the program? [PROBE: Target audience, measure mix]
7. What are the barriers for customers in this market to install the energy efficiency upgrades outside of this program?
8. Could customers receive the same program measures and services through any of your Core programs?
    a. If so, why is there a Core and a Third-Party program?
9. What distinct value does the program offer compared to Core programs? [PROBE: Unique technologies? Unique/deeper customer services? Turnkey solutions? Innovation?]
10. Do you cross-promote the program with any of the Core programs? [IF YES, PROBE: How? Where? Which programs?]

11. Does this program offer any Direct Install measures? [IF NEEDED] These are typically small measures that are either free or offered at a very low-cost to the customer, and are installed during the initial assessment.

    a. [IF YES] Which measures, and how are they offered to customers? [INTERVIEWER NOTE: *specifically looking to learn if DI measures are installed at the time of the audit, or through a follow-up appointment and how customers pay for the measure, if at all*]

    b. [IF YES] Is there overlap between this aspect of the program and any other Core Programs, Third-party programs or Local Government Partnerships operating in the same area? [IF YES, PROBE: How so? Which programs? Which measures?]

    c. [IF NO] Are there any Direct Install programs (Core, Third-party, or Local Government Partnerships) serving the same customers, and, if so, do the measures they provide overlap with what this program is offering? [IF YES, PROBE: How so? Which programs? Which measures?]

[REPEAT SECTION FOR EACH PROGRAM MANAGED BY THE RESPONDENT]

Program Changes & Performance

12. Thus far we used the Program Implementation Plan to learn about the program. Have there been any major changes to the program design or implementation? [PROBE: Changes related to measures, services offered, target market?]

13. Do the programs allow for quick changes in the middle of the program cycle to quickly adapt to technology changes? [moved, this was previously question 17]

    a. If so, how?

    b. If not, why and how could things change to allow for this in the future?

14. How do you think the program performed in the 2013-14 program cycle? [PROBE: What do you think went well? What was challenging? Did you expect more or less participants? Why did the program fall short/exceed savings? Why did it exceed / fall short of the budget forecast?]

[ASK IF PROGRAM CLOSED]

15. Why was the program closed during/after the program cycle?

16. Could this have been prevented?

Management by the IOU

Next, I would like to learn more about how the program(s) is/are managed between you and the implementer. [ADD IF MORE THAN 1 PROGRAM I don't think we need to do this program by program, but please point out where differences exist between programs.]

17. Can you briefly describe the utility's role in managing the program?

18. When and how do you typically interact with the implementer? [PROBE: Regular or ad-hoc meetings? How do you notify implementers of programmatic changes?]

19. What, if anything, has been challenging in terms of managing the program during the past program cycle?

20. I would like to speak about the cost-effectiveness metric that is required for 3P programs. Do you think it affects your program? If so, how? [IF NEEDED GIVE AN EXAMPLE: for example, some think that the cost-effectiveness metric for Third-Party programs might lead to them only installing short-payback equipment, such as lighting instead of deeper saving measures?]

    [PROBE: What do you think are the benefits of this metric? What are the drawbacks?]

Agility of 3P Programs

21. Thinking about the 3P programs you manage, have the technologies in the marketplace changed since the programs started?

    a. If so, how?

Recommendations from the Previous Evaluation

22. In the last cycle, an evaluator developed some recommendations and best practices for the 3P programs. We would like to walk through some of them to better understand if the best practice is applicable to your program and if was addressed in the 2013-14 program.

Best Practice	Rationale	Specific Recommendation	Question
Program Theory and Design			
Contract Changes	Mid-cycle, some 3Ps were asked to make contract changes without compensation. This included IOU mandated database changes, CPUC mandated regulatory changes and IOU requested customer communications.	IOU and 3P implementers should renegotiate the contract when large contractual changes occur.	a) Was this an issue in '13-14? b) If so, how was it addressed?
Program Qualification Changes	Changes in customer qualification requirements caused frustration and confusion.	Avoid changes where possible or allow a "grazing period" if changes are necessary.	a) Was this an issue in '13-14? b) If so, how was it addressed?
Program Management: Project Management			
Use a Well- qualified Engineering Staff	9 3P implementers noted that engineering staff was caught up in obtaining very detailed information, and focused on optimal measure selection rather than the accuracy of savings. Several 3Ps pointed to negative customer impacts when	The IOUs and the CPUC should work together to determine the "appropriate level of rigor" for custom projects.	a) Did you discuss the "appropriate level of rigor" for engineering analyses? b) If so, can you describe how engineering requirements changed?

Best Practice	Rationale	Specific Recommendation	Question
	site visits were conducted by junior staff who required more time for the audit. Further, 3Ps had to educate IOU engineers on technologies and savings calculations.		
Provide Education on Regulatory Process	Several newer 3Ps struggled to understand regulatory processes and the resources that were available to them. Some had inconsistent or incomplete knowledge of concepts such as free-ridership, cost effectiveness and the dual baseline.	Educate new 3Ps on regulatory terminology, acronyms, and available resources in California through seminars or webinars.	a) Was this an issue in '13-14? b) If so, how was it addressed?
Program Management: Reporting and Tracking			
Minimize Documentation Requirements	7 3Ps found that a one-size-fits-all approach to reporting was cumbersome for simple retrofits (i.e. lighting). 16 3Ps noted that the Bulk Load tool was still cumbersome and could be improved through automation and simplification.	Streamline reporting processes and requirements where possible. Review data requirements for different program types, and time major systematic changes with logical transition points in the program cycle.	a) Did you do anything to streamline reporting processes? b) If so, please explain how. c) If not, please explain why.
Articulate the Data Requirements Needed to Measure Success	One 3P program faced additional costs as the envisaged engineering software was not accepted by one IOU, although the same software is used in another service territory.	The IOUs and 3Ps should discuss and define data requirements related to energy savings calculations and appropriate documentation in the contracting process.	a) Was this an issue in '13-14? b) If so, how was it addressed?
Program Implementation: Participation Process and Customer Service			
Encourage Cross Promotion	3Ps were unlikely to coordinate because they typically had no incentive to cooperate and may have seen each other as competitors. One healthcare program that sought to cooperate found it difficult to determine the contact person for other programs.	An IOU developed database with program information and contact details from all programs could facilitate greater cross promotion.	a) Is there a database, fact sheet or web link that provides an overview of other programs?

[ASK IF INVOLVED IN SELECTING 3P PROGRAMS]

Portfolio Design

I would like to talk about the Third-Party portfolio more broadly.

23. What is the decision-making process to choose which 3P are implemented in a given program cycle?
24. What are the key decision criteria in choosing if programs are being implemented or closed?
25. What is the process to review any redundancies or gaps in the 3p program portfolio?
26. What are the biggest challenges in designing an effective 3P portfolio?
27. What mechanisms or planning processes can reduce redundancies in the program portfolio?
28. What program design components allow for maximum flexibility in the program implementation? [PROBE: Please give an example.]
29. What are the best methods to deal with program cycles and funding in order to develop a systematic approach to more flexible contracting?

Closing

These were all the questions I have for now. Thanks again for taking the time to speak with us. For your information, we are currently interviewing other Third-Party program managers and we will conduct interviews with program implementers thereafter. We will ask implementers to verify some of the secondary data we have collected so far, and ask more detailed questions about the program delivery. The information collected through IOU and implementer interviews will inform our characterization of Third-Party programs, which we will use to select 10 programs for further case studies.

4.2 Implementation Staff Interview Guide

Interview Guide A: Active Programs

Introduction

Thank you for making time for this discussion. As you know, Opinion Dynamics is conducting a process evaluation of California's Third-Party programs on behalf of the CPUC. We have already reviewed secondary sources including program implementation plans and monthly reports filed with the commission. The purpose of today's call is to learn more about the program design and delivery, and verify some of the secondary data we have collected so far. We will use this information to help us select 10 programs for more detailed case studies.

Do you mind if I record our discussion for the purpose of note-taking?

[IF YES] Thank you, the recorder is running now.

Role & Responsibilities

1. Can you briefly describe your role with respect to implementing this program?
    a. Did any of the staff involved with the program change mid-cycle? If so, how did you transfer knowledge?

Verification of Secondary Data of Target Market, Measures and Services

I would like to use the next set of questions to verify secondary sources and ask more detailed questions about select program characteristics that are included in the table I sent you prior to this meeting.

2. Can you give me a brief background of when the program started and how it has evolved since? [RECORD: Year and program history]
3. How were the budget and energy savings goals established?
4. Have the technologies in the marketplace changed since the program started? If so, how? Please describe what this meant for the program?
5. Do you work with manufacturers to improve or advance energy efficiency products? If so, how?
6. Looking at Table 1 we sent you prior to this call, do we accurately capture the target market, the measure mix and program services for the program? [IF NOT, PROBE: What needs to be revised?]

    [IF NEEDED: This information is based on the Program Implementation Plan. We understand that program implementation might have differed slightly.]

Table 1. Program Characteristics Verification (example)

Program	Target Market	Measure Mix	Program Services	Year of Inception

7. What are the main barriers for customers in this target market to install the program measures outside of the program? [PROBE: Are barriers related to capital, knowledge, human resources to install?]
    i. Is there a particular customer group that was particularly responsive to the program? If so, why?
8. Does this program offer any Direct Install measures that are either free or offered at a very low-cost to the customer?
9. Are any measures more commonly installed than others? [PROBE: What measures enable deeper savings? Are these commonly installed?]
10. What distinct value does the program offer compared to Core programs or Local Government Partnerships? [PROBE: Unique technologies? Unique/deeper customer services? Turnkey solutions? Innovation? Other?]

Program Delivery

I'd like to talk about program marketing and delivery.

11. Can you walk me through the process that a typical customer might experience with your program? From how the customer might learn about it to all the steps involved to fully participate?
    a. [Probe for the following as needed]
        i. Marketing channels and materials
            1. Do you market to industry associations or trade groups?
            2. How do you leverage the utility brand, if at all?
            3. How potential customers are identified
        ii. Coordination with any local governments
        iii. Customer qualification requirements
        iv. Audit: facility-wide or measure specific?
        v. How is the scope of work determined? [PROBE: How does the cost effectiveness test determine what you can or can't install? Does the cost effectiveness test have to hold for each measure or each project?]
        vi. Do customers hire their own contractor for the installation?

vii. Customer Communications: Are customers assigned a single-point-of-contact? What level of technical assistance do customers need? Are Core programs recommended?

viii. Verification, QA/QC

ix. Incentive Payment (customers or contractors)

x. Do you or the utility follow up with customers after participation in the process? If so, what is the feedback, the nature of complaints?

xi. Parties involved in implementation process [PROBE: Possibility of getting contact list if selected for case study]

12. How does the utility support the implementation of the program? [PROBE: marketing/identifying customers, engineering review, etc]

    a. Thinking of your interaction with the utility, is there anything that could be improved? Anything that would make program implementation easier from the perspective of an implementer?

13. [ASK IF CUSTOM] Can you describe the process to estimate energy savings and any challenges that may arise? [PROBE: challenges related to the engineering review process] [IF NEEDED: For example, changes to the project approval process during the 2010-12 program cycle finalized savings at their ex ante value and therefore required more rigorous engineering and documentation.]

    a. How does it affect customers or incentive estimates?

    b. Did you discuss data and documentation requirements with the IOUs during the contracting process? If so, did any challenges arise?

Program Performance & Challenges

14. How do you think the program performed in the 2013-14 program cycle?

    a. Where did the program stand at the end of the 2013-14 program cycle from the perspective of …

        i. Percent of KWH savings forecast achieved during 2013-14 [RECORD % OR: fell short, just shy, achieved, exceeded]

        ii. Percent of Therms savings forecast achieved during 2013-14 [RECORD % OR: fell short, just shy, achieved, exceeded]

        iii. Percent of 2-year budget expended (as of Dec 2014) RECORD % OR: fell short, just shy, achieved, exceeded]

        iv. Number of participants who completed upgrades during 2013-14 [RECORD NUMBER, PROBE: Are participants defined by site, service account, or otherwise]

        v. Project close rate, if tracked at all [IF NEEDED: How many customers complete program upgrades after receiving an audit or expressing interest otherwise?]

[IF NEEDED: We understand that savings are commonly claimed late throughout the quarter. To get a better understanding of where the program stands, can you please tell me where the program stood by the end of the year with respect to the following indicators?]

15. We plan on using program tracking data to characterize the commercial Third-Party programs in California and therefore want to make sure that there are no problems associated with the data we received from the IOUs. Looking at Table 2 we sent you prior to this call, do you think it gives an accurate picture of the number of participants or sites, as well as savings and budget expenditure as of September 2014? [RECORD: YES/NO, Identify areas where different figures were expected]

Table 2. Program Performance Verification (Data from September 2014)

Participants	Sites	% kWh Savings Achieved	% Therms Savings Achieved	% Budget Expended

16. What do you think worked particularly well? [RECORD: Marketing; ease of participation process; reaching niche market; increased saturation of new technology ;fast turnaround; good customer service / customer satisfaction; IOU relationship; manufacturer or contractor interaction; coordination with LGPs; coordination with Core; program flexible to change]

17. What, if anything, was challenging in implementing the program? [PROBE: What could be done to help overcome some of these challenges?]

    i. Mid-cycle changes due to regulatory requirements [i.e. Lighting dispositions, Title 24, policy unaligned with target sector needs. PROBE: Is the program design flexible to change?]

    ii. IOU processes [insufficient notice / communication; reporting requirements]

    iii. Secondary review process [PROBE: Give example]

    iv. Program cycle times [PROBE: What do you think is the ideal cycle length for your program?]

    v. Where there any lost opportunities to capture savings in the 2013-14 cycle?

    vi. [IF NOT ADDRESSED ALREADY]: Cost effectiveness tests leaving unrealized savings.

Program Value

18. If you were to advise the CPUC on how 3P programs in your target market can maximize energy savings, what would you say?

Closing of Interview

These were all the questions I have for now. Thanks again for taking the time to speak with us. The information we collected today will inform our characterization of Third-Party programs and help us select 10 programs for further case studies. If your program would be selected for a case studvy, we would likely follow up with a few additional questions to inform contractor and participant surveys which will be conducted as part of the case study.

Interview Guide B: Closed Programs

Introduction

Thank you for making time for this discussion. As you know, Opinion Dynamics is conducting a process evaluation of California's Third-Party programs on behalf of the CPUC. We have already reviewed secondary sources and learned that your program has been closed in the 13-14 program cycle. The purpose of today's call is to learn more about why the program was closed. We will use this information for a characterization of Third-Party Commercial programs, and to highlight the different reasons for closing Third-Party programs.

Do you mind if I record our discussion for the purpose of note-taking?

[IF YES] Thank you, the recorder is running now.

Program Information

1. Can you briefly describe your role with respect to implementing this program?
2. When and why did the program originate in [INSERT IOU] territory?
3. What do you think were barriers in the marketplace that this program was trying to address?
4. Did the IOU make any changes to the program savings goals or incentives during the program cycle?
5. Did you experience a successful working relationship with the IOU management?

Program Closure

6. When and why did the program close? during/after the '13-'14 program cycle? [PROBE: Was it due to market transformation, low demand, low savings, cost-effectiveness issues?]
7. Do you think there is anything that could have been done to prevent the closure of the program?
8. [IF PROGRAM WAS CLOSED UPON IOU REQUEST] Did the IOU provide sufficient notice?

Closing of Interview

These were all the questions I have for now. Thanks again for taking the time to speak with us.