



EM&V GROUP A - FINAL IMPACT EVALUATION REPORT

Local Third-Party Programs - Program Year 2021

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1 EXECUTIVE SUMMARY

This report presents the evaluation of local third-party programs (local 3PPs) for program year (PY) 2021. Local third-party programs are those designed to serve customers of a single utility and reflect design elements (incentive levels and technologies) specific to the utility.

Recent California policies and California Public Utility Commission (CPUC) decisions have altered the energy efficiency (EE) landscape, including program administration. Consequently, unlike in previous years, we focus on how PY2021 local 3PPs achieve their overall goals rather than only focusing on the analysis of the effectiveness of measures, or energy saving technologies.

For our evaluation, we selected the local 3PPs with information in PY2021 to help us understand how EE programs function under third-party program design and implementation. Through program administrator (PA), implementer, and publicly available data, we investigated claimed savings and savings attributed to the programs, program innovations, overall program performance and customer participation, and the equity impacts of the programs.

Our findings indicate that a high share of the reported local 3PP savings would not have happened without the programs, indicating that the programs reached population segments that benefited from the EE services. The programs also served a higher proportion of customers in disadvantaged communities (DACs) than similar programs in the past. Disadvantaged communities refer to the areas throughout California which most suffer from a combination of economic, health, and environmental burdens.¹ The programs used innovative outreach and delivery strategies to achieve these outcomes. However, the complete determination of the effectiveness of these strategies, particularly in delivering deep savings, will take time and require programs to track and report performance metrics to help in this assessment. The sections below provide an additional summary of our findings.

1.1 Background

The 2016 California Public Utilities Commission (CPUC) decision, D. 16-08-019, requires investor-owned utilities (IOUs) to have at least 60% of their energy efficiency portfolio budgets be devoted to programs designed and executed by third-party implementers by the end of 2022.² To be designated as “third-party,” a program must be proposed, designed, implemented, and delivered by non-utility entities under contract to a utility PA. The impetus for this change was to encourage innovation and cost-effective program delivery. This policy change envisioned third-party programs to increase the uptake of cost-effective energy efficiency by using a technology, marketing strategy, or delivery approach in a new way.³ Although a program might not be individually cost-effective, the CPUC expected the change to lead to cost-effective savings at the portfolio level.

DNV selected the PY2021 local 3PPs for evaluation from third-party contracted programs listed on the California Energy Efficiency Coordinating Committee (CAEECC) website.⁴ We selected seven programs with contracts that began in 2020 or early 2021 and had sufficient savings data for evaluation as of May 2022. We excluded programs that reflected local government partnerships, codes and standards, and Normalized Metered Energy Consumption (NMEC) projects, which are

1 CPUC, “Disadvantaged Communities,” cpuc.gov, 2021, <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/disadvantaged-communities>

2 CPUC, “Decision Providing Guidance for Initial Energy Efficiency Rolling Portfolio Business Plan Filings,” cpuc.gov, August 16, 2016

<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M166/K232/166232537.PDF>

3 CPUC, “Energy Efficiency Programs Implementation Plan Template Guidance,” cpuc.gov, May 2020, <https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/i/6442466376-implementation-plan-template-may2020.pdf>

4 CAEECC, caeecc.org, <https://www.caeecc.org/>



covered under different CPUC contract evaluations, and industrial and agricultural programs, which reported relatively low savings.

The seven local 3PPs included in the PY2021 evaluation are:

Residential Zero Net Energy Transformation Program (RZNET - SDGE4002) - a new program focusing on complimentary audits, direct install measures,⁵ and advanced energy efficiency consultations among manufactured home and multifamily participants.

Public Government and K-12 Comprehensive Program (GK12 - PGE_Pub_009) - a new standalone program that offers audits, technical assistance, and downstream⁶ and direct install measures designed for small, medium, and large public-sector customers.

Residential Multifamily Energy Savings Program (MESP - PGE_Res_003) - a new retrofit program that offers flexible incentives,⁷ and downstream and direct install measures to multifamily buildings with five units or more.

Community Language Efficiency Outreach Program (CLEO - SCG3861) - a program that serves residential customers who have limited English abilities or are otherwise disadvantaged by offering free installation of a variety of technologies or equipment and energy efficiency education.

Small and Medium Commercial Program (SMCP - SCG3882) - a downstream program designed for small and medium commercial businesses, including restaurants, lodging, dry cleaning, retail, and offices.

Residential Advanced Clean Energy Program (Res ACE - SCG3883) - a downstream direct install program that serves single-family owners and renters.

Comprehensive Manufactured Home Program (CMHP - SCG3884) - a program that offers audits, direct install measures, and advanced clean energy opportunities with co-pay to manufactured homes.

1.2 Research objectives

Our research objectives in this evaluation were to:

- Estimate the electric and gas savings associated with the PY2021 local 3PPs.
- Estimate the proportion of program installations that would have occurred without the programs.
- Assess the innovativeness, performance, and effectiveness of local 3PPs.
- Understand participant characteristics and experiences.

1.3 Study approach

Energy Savings. DNV evaluated utility reported savings based on measure package⁸ validation and installation verification. We verified that programs used the appropriate measure package values, including unit energy savings, in the claims they filed with the CPUC. We aligned the tracking data values with information found in the Database for Energy Efficient Resources (DEER) measure packages where we found discrepancies between the two.

⁵ Direct install measures are energy saving technologies or upgrades installed by programs for no or low-cost in participating customer homes.

⁶ Downstream is a delivery mechanism that provides incentives and technologies directly to customers.

⁷ Flexible financing provides tailored financing and incentives based on customer needs rather than a fixed value.

⁸ Measure packages contain estimates on energy savings (deemed savings values) of different technologies used in residential and non-residential settings. Energy efficiency programs use them to make savings claims. Database for Energy Efficient Resources (DEER), available at eTRM: <https://www.caetrm.com/>, provides deemed savings and other measure package information.



For installation verification, we collected information using phone surveys among residential and non-residential participants and property managers. We also used a video data collection tool called [Blitz](#) to verify the installation of measures that can easily and safely be identified among a subset of residential participants. Using the Blitz tool, we visually verified that the equipment programs installed in customer homes were in place through a secure image capture of the video feed. We conducted this verification for tankless water heaters, tank insulation, and smart thermostats. The Blitz tool also provided the approximate geographic location of each participant’s smartphone during the interview, which helped confirm that the equipment was installed at the claimed customer’s address.

Program Influence. We conducted web surveys with residential participants and phone surveys with non-residential and property manager participants. Sample sizes are shown in Table 1-1. We used the information gathered to determine net-to-gross ratios (NTGR),⁹ which measure the amount of savings that can be attributed to program influence, and net savings for evaluated program savings. Estimates based on the sample sizes shown below satisfy the 90/10 minimum confidence level and precision requirements.¹⁰

Table 1-1. Survey efforts and sample size summary

Surveys	Mode	Participant population	Sample size	Completed surveys
Residential participant survey	Web	19,903	13,712	1,343
Non-residential participant survey	Phone	62	56	38
Residential property manager survey	Phone	404	99	92

Program performance and participant characterization. In addition to energy savings, we analyzed the performance of local 3PPs to gain a broad understanding of the effectiveness of energy efficiency program delivery under third-party program implementation. We evaluated if local 3PPs were innovative and reached a broad range of participants, including hard-to-reach (HTR)¹¹ customers and those in DACs. To help achieve these goals, we assessed the local 3PPs’:

- Goals relative to their targets
- Performance relative to identified peer programs¹²
- Marketing and delivery strategies
- Depth of retrofit (DOR)¹³

We reviewed program implementation plans (PIPs), interviewed PA program staff and implementers, reviewed tracking data, California Energy Data and Reporting System (CEDARS) cost and savings filings, and key performance indicators (KPIs) for this evaluation. We supplemented the evaluation with data collected from participant surveys, utility customer information systems (CIS), and the American Community Survey (ACS).

Equitable evaluation. This is the first year where our evaluations focused on the program rather than the measure level. This created an opportunity to conduct a process evaluation of the programs in relation to the CPUC’s *Environmental and Social Justice Action Plan (ESJ Plan)* goals.¹⁴ Although these goals were not established until 2021, after the evaluated

⁹ The net-to-gross ratio (NTGR) is the complement of free-ridership. For example, an 80% NTGR indicates 20% free-ridership. Gross savings are multiplied by the NTGR to arrive at net savings. Participants that would have installed the same measures in the absence of the program are called free-riders. They are referred to as free-riders because they are receiving incentives from programs for actions they would have taken without the programs’ existence.

¹⁰ 90/10 indicates how confident we can be that an answer falls within a certain bound. It is a common criterion used in energy efficiency evaluation requiring that the research achieves 90% confidence that an estimated metric, such as NTGR, falls within 10% of the true value to provide a statistically valid outcome.

¹¹ Hard to reach (HTR): The criteria for residential HTR customers is the combination of a geographic prerequisite plus at least one of the following criteria: primary language, income, or housing type. Commercial HTR customers are defined by a combination of a geographic requirement plus at least one of the following criteria: primary language, business size, or leased or rented facility. Specific details can be found here: [Statewide Deemed Workpaper Rulebook](#).

¹² These are predecessor (PY2020) programs DNV identified based on information from PA program staff and implementers that treated a similar class of customers and, in most cases, offered comparable measures.

¹³ This metric measures average savings per site as percent of site energy consumption. It gauges the degree of energy efficiency delivered by program activity.

¹⁴ CPUC, “Environmental & Social Justice Action Plan,” cpuc.gov, April 7, 2022 <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/news-and-outreach/documents/news-office/key-issues/esj/esj-action-plan-v2iw.pdf>



programs were designed, this evaluation provides a baseline against which future program implementation can seek to exceed and a foundation for recommendations that will help the programs to do so. To accomplish this, we examined if local 3PP activities were consistent with the *ESJ Plan* goals.

1.4 Key findings

1.4.1 Gross and net impacts

In general, the programs applied DEER measure package values appropriately to calculate claimed savings. In the few cases where there were discrepancies between DEER measure package values and tracking data parameters, DNV updated utility reported values to reflect the accurate DEER values. These resulted in minor modifications of claimed gross savings.¹⁵

DNV also adjusted gross savings by the fraction we verified as installed based on residential remote inspections. We verified 93% of claimed installations and adjusted gross savings for program participants in this customer segment accordingly. Respondents in all but one non-residential and property manager surveys verified the installation of all measures, requiring no adjustment to claimed gross savings for this customer segment.¹⁶

Table 1-2 provides the expected (total gross claimed savings) and the achieved electric savings (total gross evaluated savings). Local 3PPs achieved approximately 5.8 GWh of gross electric savings, which is 94% of claimed gross savings (gross realization rate).¹⁷ Total gross savings were further adjusted to reflect the portion of savings that can be attributed to program influence (total net savings). Program attribution (evaluated NTGR) is higher than claimed attribution (claimed NTGRs). We calculated claimed NTGRs by dividing total claimed net savings by total claimed gross savings for each program. Our evaluation indicates that the PY2021 local 3PPs caused electric savings of 5.5 GWh.

Table 1-2. Local 3PP gross and net electric savings by program, PY2021

Program	IOU	Customer segment	Total gross savings (kWh)		Gross realization rate	Claimed NTGR	Evaluated NTGR	Total net evaluated savings (kWh)
			Claimed	Evaluated				
Residential Zero Net Energy Transformation	SDG&E	Multifamily	609,178	609,178	100.0%	63.2%	99.9%	608,638
		Mobile Home	1,249,037	1,162,896	93.1%	72.9%	90.5%	1,052,842
Public Government and K-12 Comprehensive Program	PG&E	Public	135,985	110,148	81.0%	85.6%	100.0%	110,148
Residential Multifamily Energy Savings Program	PG&E	Multifamily	256,816	256,816	100.0%	60.0%	97.4%	250,135
Community Language Efficiency Outreach Program	SCG	Single family	93,164	86,739	93.1%	95.1%	95.8%	83,092
Small and Medium Commercial Program	SCG	Commercial	-320	-323	101.0%			
Residential Advanced Clean Energy Program	SCG	Single family	2,503,356	2,330,710	93.1%	81.1%	95.0%	2,214,663
Comprehensive Manufactured Home Program	SCG	Mobile Home	1,349,068	1,256,029	93.1%	76.9%	94.8%	1,190,600
All	All	All	6,196,283	5,812,193	93.8%	76.2%	94.8%	5,510,118

Table 1-3 provides the PY2021 local 3PPs' claimed gas savings and the savings that they achieved. The programs achieved 2,212,454 therms of gross gas savings, which is 98% of gross claimed savings (gross realization rate). Program

¹⁵ Gross savings are a measure of change in energy use due to energy efficiency programs, regardless of why customers participated.

¹⁶ We adjusted gross savings for one non-residential respondent who indicated receiving the program's technology but being unable to install it due to equipment incompatibility.

¹⁷ Gross realization rate is the ratio of evaluated savings to the original claimed savings, without any adjustments for program influence.



attribution (evaluated NTGR) is higher than claimed. Our evaluation indicates that PY2021 local 3PPs caused gas savings of 1,705,346 therms statewide.

Table 1-3. Local 3PP gross and net gas savings by program, PY2021

Program	IOU	Customer segment	Total gross savings (therms)		Gross realization rate	Claimed NTGR	Evaluated NTGR	Total net evaluated savings (therms)
			Claimed	Evaluated				
Residential Zero Net Energy Transformation	SDG&E	Multifamily	1,585,668	1,585,668	100%	63.6%	71.9%	1,140,706
		Mobile Home	125,363	116,717	93%	68.6%	87.6%	102,264
Public Government and K-12 Comprehensive Program	PG&E	Public	-1,287	-417	32%		100.0%	-417
Residential Multifamily Energy Savings Program	PG&E	Multifamily	32,653	32,653	100%	60.0%	100.0%	32,653
Community Language Efficiency Outreach Program	SCG	Single family	43,586	40,580	93%	73.1%	81.3%	32,988
Small and Medium Commercial Program	SCG	Commercial	64,077	64,077	100%	66.7%	85.3%	54,658
Residential Advanced Clean Energy Program	SCG	Single family	314,040	292,382	93%	76.1%	92.0%	268,992
Comprehensive Manufactured Home Program	SCG	Mobile Home	86,776	80,791	93%	74.6%	91.0%	73,502
All	All	All	2,250,877	2,212,454	98%	66.3%	77.0%	1,705,346

1.4.2 Program performance

1.4.2.1 Program innovation

The CPUC’s Implementation Plan Template Guidance (version 2.1) defines innovation for programs designed and delivered by third parties. Based on the CPUC guidance, local 3PPs in both residential and non-residential sectors deployed innovative strategies to engage prospective customers, improve program delivery, and track program progress.

Outreach innovations. DNV identified four broad marketing innovations the programs reported using to improve program outreach. These include analytics-based approaches to target potential participants, tailored messaging approaches, partnerships to expand the outreach of the programs, and walkthrough audits and consultations to garner greater attention and customer engagement. We evaluated the success of these outreach innovations using metrics programs reported, where available, and qualitative information obtained from implementer interviews.

The outcomes of this evaluation indicate innovations:

- that engage customers directly, such as audits and targeted messaging, are successful
- that leverage partnerships, with trade allies, community organizations, and other local actors, also garner success
- that incorporate approaches without immediate success, such as data analytics used to identify potential participants, have a place
- need to be tracked using high-quality KPIs that are consistent across programs
- need to be bi-directional and incorporate community input to ensure equitable program delivery embodying the principles of the CPUC *ESJ Plan*

Program delivery innovations. The local 3PPs also proposed innovations to improve program delivery. Innovations in this area focused on efforts to achieve deeper savings through:

- Customer education
- Tailored service offerings
- Encouraging investment in advanced clean energy solutions



- Cross-program participation and technologies that target energy efficiency, demand response, and water savings
- Financing approaches, such as flexible incentives, to reduce upfront participation costs
- Online platforms, tools, and metrics to track program activities, including outreach and delivery

Our findings indicate that innovations will take time to achieve deeper savings. The available evidence, based on the few programs with KPIs that track conversion to deeper savings, indicates mixed success in delivering deep savings. However, all the programs have placed a great emphasis on achieving deeper savings and are paying attention to innovations that make this possible. The implementation plans as well as interviews with implementers conveyed the objective of a transformational rather than a transactional engagement with customers.

1.4.2.2 Program delivery

The third-party programs DNV evaluated began activities in 2021 as part of 3-year contracts. The performance of these programs is mixed. Some programs achieved their spending, savings, and cost effectiveness goals, while others did not. The goals are captured by each program's filed/planned amounts reported in CEDARS before the start of the program year.¹⁸ The claimed/delivered values are also reported in CEDARS after the end of the program year. DNV evaluated performance in these areas by comparing each program's goals to claimed values. In particular, we compared their filed budgets to actual program spending, their filed net savings to claimed net savings, and cost effectiveness outcomes to filed values. We also examined the percentage of budgets spent on overhead and outreach activities.

The data indicate that programs that achieved their spending and savings goals spent close to their budgeted amount and claimed savings close to filed levels. These programs also reported cost-effective operations. The programs that met their spending, savings, and cost effectiveness goals also performed better than their peers based on the same metrics.

In general, programs that served the residential single-family and manufactured home customer segments met their goals, and those serving non-residential and large multifamily customers did not meet their spending, savings, and cost effectiveness goals. The residential programs also performed better than peer programs in these areas.

Table 1-4 summarizes the performance of local 3PPs and peer programs. It provides claimed net savings and program spending relative to filed savings and budgets, captured by spending/budget ratios and the percent of net MMBtu claimed to filed levels. It also provides cost effectiveness of the programs based on TRC¹⁹ values.

The values in the table are sorted based on the TRC values of the local 3PPs. Three local 3PPs performed better than their peers by spending close to their budgeted amounts and delivering savings close to planned or filed levels. These programs also spent no more than 10% of their overall budget on overhead activities and had higher TRC values. By contrast, two local 3PPs performed worse than their peers.

18 SMCP - SCG3882, Res ACE - SCG3883, and CMHP - SCG3884 did not report PY2021 filed budgets and net savings. DNV used PY2022 budget filings and 2021 net savings goals reported in the KPI tables the PAs provided to calculate the values presented in the table.

19 The Total Resource Cost (TRC) Test is a measure of cost effectiveness that compares the net benefit of programs to their net cost.

[https://docs.cpuc.ca.gov/published/FINAL_DECISION/105926-03.htm#:~:text=\(3\)%20The%20Total%20Resource%20Cost,participants%20and%20the%20utility%27s%20costs.](https://docs.cpuc.ca.gov/published/FINAL_DECISION/105926-03.htm#:~:text=(3)%20The%20Total%20Resource%20Cost,participants%20and%20the%20utility%27s%20costs.)



Table 1-4. Local 3PP and peer program performance (filed versus claimed)

Program	IOU	TRC		Spending/Budget		Overhead cost per total spending		Percent net energy (MMBtu) delivered	
		Peer Program	Local 3PP	Peer Program	Local 3PP	Peer Program	Local 3PP	Peer Program	Local 3PP
Comprehensive Manufactured Home Program	SCG	1.2	2.5	68%	65%	29%	8%	141%	57%
Residential Advanced Clean Energy Program	SCG	0.3	1.5	54%	112%	1%	7%	19%	122%
Residential Zero Net Energy Transformation	SDG&E	0.5	1.1	68%	105%	15%	9%	33%	134%
Small and Medium Commercial Program	SCG	2.2	1.1	95%	17%	5%	29%	94%	28%
Residential Multifamily Energy Savings	PG&E	0.3	0.3	53%	20%	17%	52%	52%	8%
Public Government and K-12 Comprehensive Program	PG&E		0.2		30%		38%		7%
Community Language Efficiency Outreach Program	SCG	0.2	0.2	32%	151%	13%	8%	44%	56%

It is evident that some programs still need time to ramp up their program activities to demonstrate what they can deliver. In D.18-05-041, the CPUC made provisions for a ramp period as energy efficiency programs transitioned to third-party program administration by lowering the PAs' portfolio-wide TRC.²⁰ In the decision, the commission recognized that third-party actors need time to design and implement programs over the 2018-2022 period.

The programs that did not perform as well relative to their goals and predecessors, where applicable, are ones that are still ramping up the delivery of their energy efficiency offerings. These programs operate in customer segments where results will take time to show. Implementers of these programs indicated that initial program uptake was slow, and adjusted their outreach tactics in the middle of 2021. These programs expect those adjustments to improve uptake in 2022 and 2023.

1.4.2.3 Customer participation - HTR/DAC

The evaluation assessed HTR and DAC participation in the local 3PPs relative to the peer programs. All of the local 3PPs targeted low- or moderate-income and HTR customers, and customers in DACs. Generally, all local 3PPs had a relatively higher emphasis on these customer types than their peer programs. As an aggregate, and for most of the programs individually, the local 3PPs were able to reach an equal or greater proportion and greater volume of HTR and DAC customers than the peer programs (Figure 1-1). They also served more customers that are on CARE/FERA²¹ and lived outside metro (non-metro) areas.²²

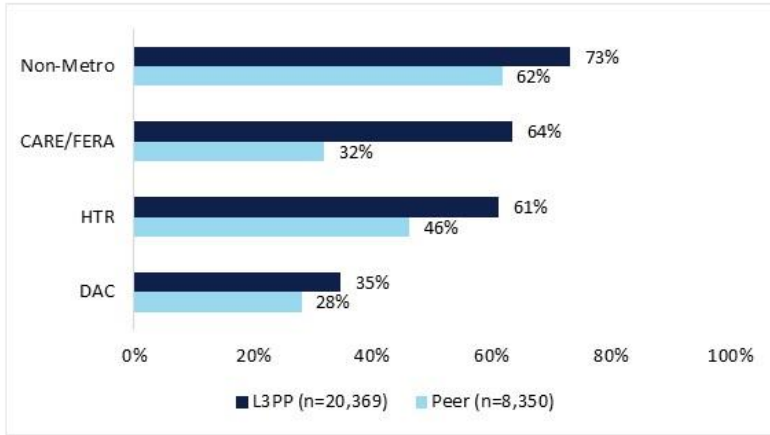
²⁰ CPUC, "Decision Addressing Energy Efficiency Business Plans," cpuc.ca.gov, May 31, 2018, <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M215/K706/215706139.PDF>

²¹ California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance Program (FERA) provide energy bill discounts for income qualified households in California. CARE is a proxy for low-income and is one of the criteria used to define HTR.

²² Non-metro are regions that are outside of the U.S. Office Management and Budget Combined statistical (CBSAs) areas of the San Francisco Bay area, San Diego, Greater Los Angeles (Los Angeles, Orange, San Bernardino, Riverside, and Ventura counties), and Sacramento. Non-metro regions are of the criteria used to define HTR.



Figure 1-1. Local 3PPs and peer program customer characteristics



While local 3PPs reached a considerable proportion of HTR and DAC residential customers, our analysis indicated gaps in the programs’ reach of such populations living in multifamily rental buildings. Our analysis also indicated that, generally, residential participants are homeowners and have median incomes between \$25,000 and \$49,999. Most HTR residential customers identify as Hispanic, while most non-HTR residential customers identify as white. A majority of residential participants in mobile homes are retired, whereas a majority of those in single-family homes are in the labor force. Moreover, more HTR residential participants experienced energy insecurity, with larger proportions having difficulty paying their utility bills in the last 12 months, than non-HTR participants.

Local 3PPs also served commercial customers that were HTR and operated in DACs. These participants were businesses mainly operating small hotels and dry cleaners, with 1-9 employees who spoke a mix of English and other languages at work. The programs also served public sector participants largely located outside of metro areas and were thus hard to reach. Participants in this sector were mostly large K-12 schools with over 50 employees who primarily spoke English in the workplace.

1.4.3 Equitable evaluation

The ESJ goals were adopted in 2021 and therefore would not have been considered by program designs of PY2021 Local 3PPs. The program activities were consistent with some of the CPUC ESJ goals but not others. More information is needed to assess consistency with several others.

The local 3PP activities are consistent with the following CPUC ESJ goals:

- Goal 2: Increase investment in clean energy resources [programs] to benefit ESJ communities.
- Goal 3: Strive to improve access to communications for ESJ communities.

More information is needed to assess how consistent local 3PP activities are with the following CPUC ESJ goals

- Goal 1: Consistently integrate equity and access considerations throughout CPUC regulatory [and programmatic] activities.
- Goal 4.1: Ensure ESJ communities and considerations around their adaptive capacity are incorporated into relevant programs and activities.
- Goal 6.1: Protect ESJ Consumers [through equitable programs].



- Goal 8: Improve training and staff development related to ESJ issues within the CPUC’s jurisdiction [specifically focused on equitable evaluation].
- Goal 9: Monitor the CPUC’s ESJ efforts to evaluate how they are achieving their objectives.



The local 3PP activities are not consistent with the following CPUC ESJ goals:

- Goal 5: Enhance outreach and public participation opportunities for ESJ communities to meaningfully participate in the CPUC’s decision-making process and benefit from CPUC programs.

1.5 Recommendations

Table 1-5. Key findings and recommendations

 Key findings	 Implications and recommendations
1. Evaluated NTG values are higher than DEER default in most cases.	Program attribution (NTGRs) is higher than expected. Programs should continue targeting similar population segments. We recommend that the DEER team review the default NTG values for measures offered through downstream delivery channels.
2. Direct outreach and partnering with other organizations/entities were effective outreach innovations/strategies.	Programs that use intelligent targeting and other data-based approaches should consider a hybrid approach that leverages direct outreach strategies.
3. Not all programs tracked outreach innovations making it difficult to assess their true impact.	Programs should identify a common set of KPIs based on similar definitions and benchmarks to monitor and facilitate comparison of the performance of innovations across programs over time and use the results to refine program design and improve outcomes.
4. Outreach activities appear to be one-directional, where the local 3PPs do not provide opportunities for community input into program design.	Build more community input into all phases of program delivery.
5. Program delivery innovations will take time to achieve deeper savings.	Local 3PPs are still in their nascent stages and more time is needed to determine the success of program delivery innovations in delivering deeper savings.
6. The program’s activities were consistent with some of the CPUC ESJ goals but not others, and more information is needed to assess consistency with several others.	PAs should include equity- and access-related metrics for all programs.

 Key findings	 Implications and recommendations
	<p>Provide additional guidance relating to what practices and outcomes are consistent with ESJ Goals 4.1, 6.1, 8, and 9.</p>
<p>7. Local 3PPs are more effective than peer programs at reaching HTR and DAC customers.</p>	<p>Local 3PPs should work on consistently integrating equity and access in program design while continuing the current efforts. Strive to directly collaborate with community partners to improve outreach.</p>



2 INTRODUCTION

This report presents DNV’s evaluation of local third-party programs (local 3PPs) for program year (PY) 2021 on behalf of the California Public Utilities Commission (CPUC). CPUC Decision 16-08-019, issued in 2016, requires the program administrators (PAs) to have at least 60% of their energy efficiency budgets dedicated to third-party designed and implemented programs by the end of 2022.²³ To be designated as a “third-party,” a program must be proposed, designed, implemented, and delivered by a non-utility party under contract to a utility PA. The impetus for this was to encourage innovation and produce program delivery cost savings. Potential areas of innovation include program design, delivery, and hard-to-reach (HTR) customer outreach strategies.

2.1.1 Overview of local third-party programs

The California Energy Efficiency Coordinating Committee (CAEECC) is the source of the information on the PY2021 local 3PPs DNV considered for evaluation.²⁴ The CAEECC website provides the local 3PPs that are under contract to Pacific Gas and Electric (PG&E), Southern California Gas Company (SCG), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E). As of May 2022, the site indicated 26 energy efficiency contracts, 22 for local and four for statewide programs, that fall under Group A’s scope.²⁵ Of the 22 local 3PPs, we evaluated seven to assess the goals and performances of local 3PPs. We did not consider the remaining 15 local 3PPs for evaluation since two were ending in PY2022 or PY2023, and 13 had minimal savings or lacked program IDs in the tracking data. The 13 programs may be good candidates for evaluation in subsequent years as they ramp up project activities and report more data.

Table 2-1 provides a summary of the programs including names, program IDs, and a description of the PY2021 evaluated local 3PPs.

Table 2-1. Local 3PPs evaluated in PY2021

Program name/ID	PA	Primary sector	Implementation type	Program description
Residential Zero Net Energy Transformation Program (RZNET - SDGE4002)	SDG&E	Residential	Direct Install Downstream	RZNET is a downstream program that targets multifamily and manufactured housing communities in SDG&E territory. It provides measures such as HVAC, hot water heating, and lighting.
Public - Government and K-12 Comprehensive Program (GK12 - PGE_Pub_009)	PG&E	Public	Downstream	GK12 targets federal and local government facilities and K-12 schools across PG&E’s service territory. It offers downstream, direct install, and custom measures for a broad range of public

²³ CPUC, “Decision 16-08-019,” cpuc.ca.gov, August 18, 2016, <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M166/K232/166232537.PDF>

²⁴ California Energy Efficiency Coordinating Committee, “Welcome to the California Energy Efficiency Coordinating Committee,” caeecc.org, <https://www.caecc.org/>

²⁵ At the time of writing the workplan, there were about 80 third-party program contracts on the CAEECC website. For the Group A local 3PP evaluation, DNV did not consider the following types of contracts:

- C&S (covered under Group B)
- Local Government Partnerships (covered under Group B)
- Site-level NMEC projects (covered under Group D)
- Industrial and agricultural programs (reported relatively low savings)
- Contracts that did not begin in 2020 or early 2021

Twenty-six 3PPs were available for evaluation after excluding such contracts, four of which were statewide and 22 were local. The 22 local 3PPs formed the frame that we considered for evaluation.

Program name/ID	PA	Primary sector	Implementation type	Program description
				customers, including HTR and disadvantaged communities (DAC) customers.
Residential - Multifamily Energy Savings Program (MESP - PGE_Res_003)	PG&E	Residential	Direct Install Downstream	MESP is a multifamily retrofit program offering cash incentives and direct installation services to residential properties of 5 or more units in PG&E's service territory. It provides aerators, smart thermostats, clothes washers, and heat pump water heaters.
Community Language Efficiency Outreach (CLEO - SCG3861)	SCG	Residential and Commercial	Direct Install Downstream	CLEO is a language outreach program that targets Chinese, Vietnamese, Korean, Hispanic, Indian, and African American communities in SCG's territory. It offers residential and commercial measures, as well as community outreach events.
Small and Medium Commercial EE Program (SMCP - SCG3882)	SCG	Commercial	Downstream	SMCP is a downstream program that offers a variety of commercial measures including insulation, tankless water heaters, ovens, and more. It targets HTR/DAC customers.
Residential Advanced Clean Energy (Res ACE - SCG3883)	SCG	Residential	Direct Install Downstream	Res ACE is a downstream program that serves single-family homes and offers smart thermostats, water heaters, aerators, etc. It targets HTR/DAC customers.
Comprehensive Manufactured Home Program (CMHP - SCG3884)	SCG	Residential	Direct Install Downstream	CMHP is a downstream program that targets manufactured housing customers in SCG's territory. It offers smart thermostats, hot water heaters, furnaces, aerators, etc.

2.1.2 Reported gross and net savings

Table 2-2 summarizes the PY2021 claimed electricity and gas savings of the seven selected local 3PPs. It indicates that most of the local 3PPs' claims in PY2021 are for SCG customers. The programs largely targeted residential customers but also served commercial and public entities in PY2021.

Table 2-2. Local 3PPs' kW, kWh, and therm claims

Program name	No. of claims	First year kW		First year kWh		First year therm	
		Gross	Net	Gross	Net	Gross	Net
Res ACE - SCG3883	33,962	1,537	1,041	2,503,356	2,031,242	314,040	238,848
CMHP - SCG3884	7,873	596	439	1,349,068	1,037,742	86,776	64,695
RZNET - SDGE4002	6,507	716	518	1,858,214	1,295,849	1,711,031	1,094,726
MESP - PGE_Res_003	45	27	16	256,816	154,089	32,653	19,592
CLEO - SCG3861	7,007	0	0	93,164	88,574	43,586	31,878



Program name	No. of claims	First year kW		First year kWh		First year therm	
		Gross	Net	Gross	Net	Gross	Net
GK12 - PGE_Pub_009	13	14	9	135,985	116,397	-1,287	-1,076
SMCP - SCG3882	251	0	0	-320	-208	64,077	42,719
Total	55,658	2,890	2,023	6,196,283	4,723,685	2,250,877	1,491,382

2.1.3 Evaluation objectives

Our research objectives in this evaluation were to:

- Estimate the electric and gas savings associated with the PY2021 local 3PPs.
- Estimate the proportion of program installations that would have occurred without the programs.
- Assess the innovativeness, performance, and effectiveness of local 3PPs.
- Understand participant characteristics and experiences.



3 METHODS

In this section, we provide a summary of the data sources used to evaluate the PY2021 local 3PPs. We also detail the methods used to evaluate the programs.

3.1 Data sources

We summarize the various data sources and the purpose of their inclusion in the evaluation in Table 3-1. We used the data to estimate gross and net program savings, assess program performance, define HTR/DAC customers, and enable participation analyses.

Table 3-1. Summary of data sources and purpose in evaluation

Data sources	Description	Purpose in analysis
Program tracking data	The tracking data provides program names, measures, the number of claims, savings per measure and claim, incentives, etc.	Identify program participants, installed measures, and claimed (ex-ante) savings
Utility billing data	The billing data provides customer energy consumption (kWh and therms) and bill rates	Program performance assessment and participation analysis
PA customer information system (CIS) data	PA CIS data includes information on customer characteristics such as housing type, zip code, climate zones, etc.	
U.S. Census data	Block group level data on language, geographic region (urban/rural), and rental status from the American Community Survey (ACS)	
U.S. Office of Management and Budget (OMB)	Core-based statistical area (CBSA) used to define metro- and non-metro areas	
Data Axle	Source of database with information on company size, annual revenue, location, NAICS code, etc.	
California Environmental Protection Agency (CalEPA)	Provides CalEnviroScreen, which measures economic, health, and environmental burdens at the census tract level	
Program information	PA supplemental participant information (account number, contact name, email, phone number) and information on replaced and installed measures	Gross savings verification, program performance assessment, and participation analysis
Telephone/web/video surveys	Surveys of customers, property managers, and contractors	Inform net-to-gross ratios (NTGRs) and net savings Verify installation Program performance assessment, participation and customer experience analyses
In-depth interviews	Interviews of PA program staff and implementers to gather information on program design and performance including marketing and outreach efforts, program status (budget spent, customers reached, and measures installed)	Verify installation and program performance assessment, and participation analysis



The following list summarizes how these data were used in this evaluation:

- **Program tracking data:** We sourced information about program participation at the claim level from tracking data that the PAs filed with the CPUC in the California Energy Data and Reporting System (CEDARS). We analyzed, cleaned, and re-categorized these datasets for use in the evaluation.
- **Program billing data:** We obtained energy consumption data at the customer account level from the PAs to calculate energy savings relative to annual energy consumption. We also obtained customer rates to identify those that are on CARE/FERA.²⁶
- **Customer information system (CIS) data:** We obtained information on participants (including location, climate zone, address) from utility customer information tables to understand participation patterns.
- **U.S. Census data:** We supplemented participant information (location, language, and rental status) with block group level data from the American Community Survey (ACS) conducted by the U.S. Census Bureau. We mapped this information to program areas to understand participant characteristics and program performance.²⁷
- **U.S. Office of Management and Budget (OMB):** We used the U.S. OMB's core-based statistical areas (CBSAs), which include the San Francisco Bay area, San Diego, Greater Los Angeles (Los Angeles, Orange, San Bernardino, Riverside, and Ventura counties), and Sacramento to define metro and non-metro regions. Non-metro regions are one of the criteria used to identify HTR customers.
- **Data Axle:** We used this database to obtain information on company size, annual revenue, location, NAICS code, etc. and used the data to characterize business participants and examine program performance.
- **CalEnviroScreen:** The California Environmental Agency (CalEPA) calculates this metric, which provides a geographic picture of the environmental, public health, and socioeconomic conditions in California's 8,057 census tracts.²⁸ It enables a relative ranking of the pollution burdens and socioeconomic vulnerabilities of communities across CA. We used this metric to identify DACs for program performance assessment and an appraisal of DAC participation in local 3PPs.
- **Program information:** We also requested additional participant information (account numbers, contact names, emails, and phone numbers), information on replaced and installed measures, and program information (budget spending, marketing, and outreach) for the evaluation. We used this data to understand participation patterns and assess program performance.
- **Telephone/web/video surveys:** We performed surveys with residential and non-residential end users, property managers, and contractors. Both gross and net savings estimates required information collected from the surveys. We also used the data collected to benchmark program performance, characterize participants, and gain insight into customers' experiences.

26 California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance Program (FERA) provide energy bill discounts to income qualified households in California. CARE is a proxy for low-income and is one of the criteria used to define HTR.

27 U.S. Census Bureau. (2020). 2015-2019 American Community Survey Data, 5-Year Estimates. We used the following ACS variables to characterize program participation:

- o Household limited English proficiency (ACS Table ID: C16002) – The number of households where no one over the age of 14 in the home speaks English "very well" relative to total households in the block group.
- o Multifamily and mobile home rental status (ACS Table ID: B25032) – The number of multifamily and mobile home rental units relative to total housing units in the block group.

28 OEHHA, "Map of CalEnviroScreen 4.0 Indicators," oehha.ca.gov, <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40>

- In-depth interviews:** We also conducted in-depth interviews with PA staff and program implementers to understand program design and execution. We collected information on marketing and outreach efforts, program budget spending and other dimensions of program delivery, participation levels compared to planned levels, and related information to inform our data collection and program performance assessment efforts.

3.2 Primary research

This section provides the primary research approach that we used to evaluate local 3PPs including the data collection, sample design, and survey approaches.

3.2.1 Data collection

Table 3-2 summarizes our primary data collection efforts including key details such as respondent group, type of information collected, sample frame source, mode, and sample size used to evaluate PY2021 local 3PPs.

Table 3-2. Summary of primary data collection efforts – evaluation of PY2021 local 3PPs

Survey type	Respondent group	Data collected	Frame source	Mode	Stratification approach	Sample size
PA	Utility staff and implementers	Program design and outreach, program innovation, program spending and incentives, customer participation trends, KPIs	All utility program information	In-depth Interviews	N/A	Census ²⁹
Contractor	Contractors	Program effectiveness, market characteristics	Implementer information	Phone survey	N/A	Census
Non-residential end user	Public sector participant Commercial participant	Program influence / NTG, participant characteristics, program awareness, experience and barriers, participation in other programs	Program tracking data	Phone survey	Program, measures installed	Census (public and commercial participants) ³⁰
Residential Property manager	Property manager participant					n=99 (property managers)
Residential end user	End user participant	Program influence / NTG, demographic data, occupancy, program awareness and experience, participation in other programs	Program tracking data	Mixed mode – Web and Blitz	Program, HTR/DAC, climate zone	Census ³¹

3.2.2 Sample design

The population or sampling frame for residential and non-residential end users and property manager survey groups was the list of savings claims provided in the tracking data. The sampling frame for contractors was the list of installation contractors used by implementers.

²⁹ We conducted interviews with three IOUs and the implementers that designed and ran the local 3PPs offered to the IOU customers.

³⁰ We attempted a census for the research among public sector and commercial participants and conducted post hoc balancing by the strata noted in the table.

³¹ We attempted a census for the research among residential end-users with the aim of a minimum of 70 completes by program to achieve a relative precision of ±10% at a 90% confidence level.

For primary data collection, our sample design approach was based either on a census or a stratified sampling approach. Under the census approach, we attempted to collect data for all individual units in the population. Under the stratified sampling approach, we selected sample units for study from groups of interest (e.g., program and measure group) stratified by savings measured in MMBtu, which is the sum of kWh and therm savings converted to MMBtu. We then estimated appropriate sample sizes for each program to achieve a targeted relative precision ($\pm 10\%$) at a desired level of confidence (90%). Once sample sizes were calculated, we randomly chose primary sample points from the population based on the stratification plan. In addition, we selected a backup sample in case any sample points needed to be replaced. Replacement happened with sites that cannot be contacted or evaluated.

The tracking data information summarized in Table 3-3 provides the number of claims and participants by survey type and program used in the PY2021 evaluation. The number of participants in the table provides population sizes that are sources of all the survey sample frames.

Table 3-3. Local 3PPs survey type, number of participants, and savings

Survey type	Program name	No. of claims	Number of participants	First year gross kW savings	First year gross kWh	First year gross therm
Residential end user survey	Res ACE - SCG3883	33,962	12,838	1,537	2,503,356	314,040
	CMHP - SCG3884	7,873	3,731	596	1,349,068	86,776
	CLEO - SCG3861	7,007	2,308	0	93,164	43,586
	RZNET Mobile home - SDGE4002	5,734	1,026	705	1,249,037	125,363
Residential property manager survey	RZNET Multifamily - SDGE4002	773	364	11	609,178	1,585,668
	MESP - PGE_Res_003	45	40	27	256,816	32,653
Non-residential end user survey	GK12 - PGE_Pub_009	13	12	14	135,985	-1,287
	SCG Small and Medium Commercial EE Program (SCG3882)	251	50	0	-320	64,077

We adopted a census approach with residential end users and invited all participants with available contact information to provide survey responses. We aimed to get a minimum of 62 to 68 responses by program to achieve relative precisions of ± 10 at 90% confidence levels among these participants. The relatively small number of non-residential end user participants, with population sizes under 68 each, also made it possible to use a census approach to collect information among this group. We collected information among these participants to achieve relative precisions of $\pm 10\%$ at the 90% confidence levels by program. We used a stratified sampling approach to collect primary data from the two residential programs with property manager decision-makers. Appendix E (section 6.5) provides the details.

3.2.3 Survey approach

The primary objective of the surveys was to develop estimates of free-ridership. The survey data also provided information on participant experience and characteristics, including participant demographics and firmographics. The survey instruments used for data collection are provided in Appendix H (section 6.8).

Topics covered by the residential and non-residential end user, property manager, and contractor surveys are summarized in Table 3-4.



Table 3-4. PY2021 Local 3PP survey topics among market actors

Survey topics	Residential end user	Non-residential end user	Property manager	Contractor
Free-ridership				
Equipment verification	•	•	•	
Measure specific free-ridership questions	•	•	•	
Program outreach and participation				
How participants first heard about the program	•	•	•	•
Preferred means of hearing about programs	•	•	•	•
Drivers of program participation	•	•	•	
Effectiveness of rebates and incentives		•		•
Equipment availability/size				•
Program experience/satisfaction				
Information provided	•	•	•	
Perceived program benefits	•	•		
Program satisfaction	•	•	•	•
Barriers	•	•	•	
Clean tech adoption				
Use of and interest in clean energy products	•	•		
Participation and interest in demand response programs	•	•		
Demographics/firmographic				
Home/facility ownership status	•	•		
Facility/company size		•	•	
Facility age			•	
Housing affordability			•	
Building/facility type		•	•	
Number of employees		•		
Primary language used at facility	•	•		
Participant characteristics: Race, income, retirement status	•			
Energy security	•			

3.2.3.1 Survey mode and disposition

Residential end user surveys: We conducted a residential end user web survey among participants that received measures from SCG’s Residential Advanced Clean Energy (SCG3883), Comprehensive Manufactured Home (SCG3884), Community Language Efficiency Outreach (SCG3861), and SDG&E’s Residential Zero Net Energy Transformation (SDGE4002) programs, which targeted single and manufactured/mobile home residential customers.

We conducted a web survey among program participants over approximately 7 weeks from December 2022 to January 2023. The sample frame for this survey was the list of participants for whom email addresses were available. We offered five respondents a chance to win a \$100 gift card to complete the survey and sent four reminders to encourage invitees to complete the survey. The sample disposition for the residential end user survey is summarized in Table 3-5. DNV adopted proven best practices in fielding this survey, including:



- Providing respondents with a link to validate the legitimacy of the survey effort
- Co-branding the survey with the CPUC and IOU logos
- Issuing the survey invitation from an email address with the IOU domain to minimize respondent's spam filters
- Letter from the CPUC study manager on the importance of this research and customer responses to energy efficiency programs

Table 3-5. Sample disposition for residential end user web surveys

Residential end users	Total	CLEO - SCG3861	Res ACE - SCG3883	CMHP - SCG3884	RZNET - SDGE4002 (Mobile home)
Invites sent	13,712	697	1,712	10,268	1,035
Partially completed	310	28	48	202	32
Completed	1,343	112	284	807	140
Response rate	9.8%	16.1%	16.6%	7.9%	13.5%

Non-residential end user surveys: We conducted a non-residential end user survey among SCG's Small and Medium Commercial (SCG3882) and PG&E's Government and K-12 Comprehensive (PGE_Pub_009) program participants. These programs offered no cost or discounted measures to commercial and public facilities, including K-12 schools. We surveyed these participants via telephone for six weeks from December 14, 2022, to January 25, 2023, with up to seven calls per participating site. We offered five participants a chance to win a \$100 gift card to encourage completion of surveys. The sample disposition for the non-residential end user surveys is summarized in Table 3-6.

Table 3-6. Sample disposition for non-residential end user phone surveys

Non-residential end users	Total	GK12 - PGE_Pub_009	SMCP - SCG3882
Attempted calls	56	6	50
Partially completed	15	0	15
Completed	34	5	33
Response rate	61%	83%	66%

Property manager surveys: We administered property manager surveys for two local 3PP multifamily programs (SDG&E Residential Zero Net Energy Transformation (SDGE4002) and PG&E Multifamily Energy Savings Program (PGE_Res_003) where property managers were the primary decision makers for installations.

We used phone surveys to collect data among this segment of participants for approximately two weeks starting on December 19, 2022, through January 2, 2023. DNV fielded up to six calls per site during this period. The objective of these surveys was to develop demographic/firmographic characteristics of the participants and to estimate free-ridership. The sample frame for this survey was based on a list of PY2021 local 3PP multifamily properties selected to represent measure groups and savings levels provided by the programs. Similar to the other residential and non-residential surveys, we offered five participants the chance to win a \$100 gift card as an incentive to complete the survey. Table 3-7 provides the sample disposition for the property manager surveys.

Table 3-7. Sample disposition for non-residential end user phone surveys

Property managers	Total	RZNET - SDGE4002 (Multifamily)	MESP - PGE_Res_003
Attempted calls	99	61	38
Partially completed	7	6	1
Completed	92	55	37
Response rate	93%	90%	97%



3.2.3.2 Blitz calls

We verified the installation of measures based on information we collected through phone surveys among residential and non-residential participants and property managers. We also used a video data collection tool called [Blitz](#) to verify the installation of measures (tankless water heaters, tank insulation, and smart thermostats) that can easily and safely be identified among a subset of residential participants. The subset included residential end users that responded to the web survey but skipped the verification question for tank insulation and smart thermostats and all participants with tankless water heaters in the population that had phone numbers.

As a part of the virtual data collection, participants received an invitation to attend a 10-to-15-minute virtual call. During the call, DNV’s evaluators used the Blitz tool to visually verify that the equipment programs installed were in place through a secure image capture of the video feed. During the call, the evaluators also asked participants follow-up questions related to participation. Where participants indicated reluctance to participate in a video call, the evaluators conducted the verification verbally during the call. The Blitz tool also provided the approximate geographic location of each participant’s smartphone, which helped confirm that the equipment was installed at the claimed customer’s address.

We offered every participant a \$50 gift card to participate in the virtual call. Table 3-8 provides the sample disposition for the Blitz calls.

Table 3-8. Residential end user Blitz verification calls

Blitz calls	Total sample
Attempted calls	91
Partially completed	1
Completed	29
Response rate	32%

3.2.3.3 Installation contractor survey

Contractors are at the forefront of program delivery and can provide valuable insights about the effectiveness of strategies, such as rebates offered directly to the customers during the delivery. We conducted a survey with the installation contractors involved in the local 3PPs to better understand program delivery, and their challenges and experiences.

We conducted a phone survey among installation contractors between January 11 to 13, 2023. These surveys covered themes such as overall satisfaction with the program, the effectiveness of the rebates in improving participation, and market conditions impacting program delivery. We offered each contractor a \$30 gift card for participating in the survey. Appendix H (section 6.8) provides the survey instrument used to collect information for this survey. As shown in Table 3-9 below, DNV interviewed 28 contractors, with the majority coming from SCG’s commercial sector program.

Table 3-9. Sample disposition for installation contractor phone surveys

Contractors	Total sample	GK12 - PGE_Pub_009	MESP - PGE_Res_003	CLEO - SCG3861	SMCP - SCG3882
Attempted calls	28	5	3	4	16
Partially completed	0	0	0	0	0
Completed	16	3	1	4	8
Response rate	57%	60%	33%	100%	50%

3.2.4 Interviews with implementers and PAs

We conducted in-depth interviews with program administrators and implementers to understand program design and execution. The information we collected included marketing and outreach efforts, program budget spending, and



participation compared to planned levels used to inform data collection and program assessment efforts. Appendix H (section 6.8) provides the interview guide we used.

We interviewed 35 PAs and third-party implementers over a three-week period in October 2022. Table 3-10 provides the interview log, which includes the program names and call dates for each of the interviews.

Table 3-10. Local 3PP PA and third-party implementer interview log

Local 3PP PY2021 program	Program Administrator call date	Implementer call date
RZNET - SDGE4002	12-Oct-22	28-Oct-22
GK12 - PGE_Pub_009	10-Oct-22	25-Oct-22
MESP - PGE_Res_003	16-Oct-22	26-Oct-22
CLEO - SCG3861	13-Oct-22	25-Oct-22
SMCP - SCG3882	13-Oct-22	28-Oct-22
Res ACE - SCG3883	17-Oct-22	28-Oct-22
CMHP - SCG3884	17-Oct-22	26-Oct-22

3.3 Savings evaluation approach

3.3.1 Gross impact evaluation

We evaluated claimed savings based on measure package validation and installation verification. For measure package validation, we used the tracking data to gather information on installed measures, including unit energy savings (UES),³² effective useful life (EUL),³³ and net-to-gross ratios (NTGRs). We also used the ‘Source Description’ field in the tracking data to identify the sources of the California eTRM measure packages for the parameters that the programs used to calculate the claimed savings.

We assessed the appropriate application of measure package information by comparing the tracking data parameters with the relevant eTRM values. We used measure characteristics from the tracking data (building type, climate zone, etc.) to find the specific combinations within each measure package that match these characteristics and to verify the accuracy of measure parameters used to calculate savings. We aligned tracking data information with information in the eTRM measure packages in the cases where we found discrepancies between the two.

3.3.2 Net impact evaluation

Gross measure savings estimates are based on program participation, regardless of why customers participated. By contrast, net savings estimates are based on the savings attributable to the program. This study examined each program’s influence on installed measures to understand what percentage of the installations would have occurred in the absence of the program. Participants that would have installed the same measures in the absence of the program are called free-riders. They are referred to as free-riders because they are receiving benefits from programs for actions they would have taken without the programs’ existence. Net savings estimates remove or “net out” these free-riders’ savings.

Rather than measure net savings directly, we developed estimates of the ratio of net savings to gross savings, or NTGR, then applied that ratio to gross savings to calculate net savings. A NTGR equal to 1.0 indicates that the programs influenced 100% of every installation—none of the program-tracked installations would have occurred without the programs. The difference between the measured NTGR and 1.0 is the free-ridership proportion. For example, 25% free-ridership yields a

³² UES provides ex-ante savings per unit of each installed measure.

³³ EUL estimates the median number of years that EE program-delivered measures are still installed and operating.



NTGR of 0.75, meaning 75% of the savings from program-incentivized installations were attributable to the program and would not have occurred in the absence of the program.

We surveyed participants who were decision makers for program installations, including participating residential and non-residential end users and property managers who were decision makers for direct install programs targeting multifamily. We calculated the level of free-ridership and its complement, the proportion of program installations that could be attributed to each program, based on the survey responses.

Our approach focused on assessing three dimensions of free-ridership: timing, quantity, and efficiency. Taken together, these dimensions allow for estimates of net energy (kWh, kW, and therm) savings attributable to each measure, because those savings depend on the number of measures installed (quantity), the efficiency of the measures (efficiency), and when the measures are installed (timing).

The timing question asks how soon each measure would have been installed absent the program. The program gets full attribution for any measure that would not have been installed at all, and it gets partial credit for accelerating the timing compared to when respondents say they would have installed the measure absent the program.

The efficiency question applies to the efficient measures installed by the programs for which there is a standard efficiency version in the market. The efficiency question gives the program full credit for the measure if the respondents indicate they would have installed nothing or a standard efficiency measure in lieu of the efficient program measure.

The quantity question asks how many units would have been installed absent the program. This question applies to measures where programs permit more than one installation per participating site. The quantity question gives the program credit if the respondents indicate they would have installed fewer measures absent the program.

Appendix F (section 6.6) details how we scored participant survey responses to derive free-ridership values. We calculated measure-level NTGRs based on these, which we used to calculate measure- and program-level net savings.

3.4 Program performance and participation analysis

DNV reviewed several information sources to understand how the local 3PPs functioned. Based on these, we built program profiles to gain a broad understanding of each program’s target sector, service offerings, and planned delivery strategies. We also examined three primary functional areas of programs to understand how the programs operated. These include program design, marketing and outreach strategies, and dimensions of program delivery. Additionally, we examined each program’s innovations and the success of these innovations.

To analyze program participation, we examined the demographic and firmographic distribution of participants, their HTR/DAC status, and interests.

We used KPIs provided by the PAs in our program performance and participation analysis wherever possible and provide an assessment of the usefulness of the KPIs we received for these purposes.

Table 3-11 provides a summary of the program performance and participation dimensions we investigated. It also summarizes the performance metrics, methods, and data sources we used to support this effort.

Table 3-11. Program performance dimensions, metrics, methods, and data used to evaluate local 3PPs

Program dimension	Performance metrics	Methods and data sources
Program profiles	Target sector, services, outreach strategies, and program delivery	Reviewed PIPs, gathered insights from implementers



Program dimension	Performance metrics	Methods and data sources
Program innovation	Marketing and outreach, program delivery, and implementation innovations	and PA interviews, analyzed KPIs
Program design	Program goals, barriers, and strategies	
Program outreach and marketing	Outreach and marketing approaches	
Program delivery – Tracking performance	Audit outcomes, cross-program marketing, and participant contact information	
Program delivery – Costs and savings	Planned to actual program spending, distribution of program spending, overhead spending per kWh and therm savings, and cost effectiveness (TRC) and total system benefits (TSB)	Analyzed CEDARS filings
Program delivery – Depth of retrofit	Savings relative to consumption and distribution of measures	Analyzed tracking and billing data
Program delivery – Participant experience	Program influences, benefits, and satisfaction	
Participant characterization	Participant demographics/firmographics, HTR/DAC status, clean technology adoption and interest, and demand response program participation	Analyzed surveys, CIS information, and ACS data
Assessment of KPI	Tracked performance, KPI definitions, and KPI benchmarks	Analyzed KPI values provided by PAs

We also benchmarked local 3PPs relative to peer programs to understand what, if anything, has changed under this new program delivery mode. Program staff and implementers directed us to predecessor programs that treated similar classes of customers and offered similar measures. We examined the measures and savings of the peer programs using tracking data. We used this data to compare the design, marketing and outreach, and delivery of PY2021 local 3PPs with those of the selected peer programs. The following table provides the local 3PPs and the selected peer programs used to benchmark performance.

Table 3-12. Local 3PPs and the peer programs by sector

Local 3PPs (PY2021)	Peer programs (PY2020)	Primary sector
RZNET - SDGE4002	W-CALS Multifamily Energy Efficiency Rebate Program - SDGE3207 Res-Comprehensive Manufactured-Mobile Home - SDGE3279	Residential
GK12 - PGE_Pub_009	N/A	Public and government
MESP - PGE_Res_003	Multifamily Energy Efficiency - PGE21003	Residential
CLEO - SCG3861	RES-CLEO - SCG3762	Residential
SMCP - SCG3882	COM-Direct Install Program - SCG3805	Commercial
Res ACE - SCG3883	RES-Direct Install Program - SCG3820	Residential
CMHP - SCG3884	RES-Manufactured Mobile Home - SCG3765	Residential

3.5 Program equity evaluation

Unlike prior evaluations in recent years, our scope for PY2021 focused on the program rather than the measure level. This created an opportunity to assess the programs in relation to the CPUC’s *Environmental and Social Justice Action Plan (ESJ Plan)* goals.³⁴ This evaluation establishes a baseline which future program implementation can seek to exceed and a

³⁴ CPUC, “Environmental & Social Justice Action Plan, cpuc.ca.gov, April 7, 2022, <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/news-and-outreach/documents/news-office/key-issues/esj/esj-action-plan-v2iw.pdf>



foundation for recommendations that will help the programs do so. The relevant ESJ goals for program evaluation include the following:

- **Goal 1:** Consistently integrate equity and access considerations throughout CPUC regulatory [and programmatic] activities.
- **Goal 2:** Increase investment in clean energy resources [programs] to benefit ESJ communities.
- **Goal 3:** Strive to improve access to communications for ESJ communities.
- **Goal 4:** Increase climate resiliency in ESJ communities.
- **Goal 5:** Enhance outreach and public participation opportunities for ESJ communities to meaningfully participate in the CPUC's decision-making process and benefit from CPUC programs.
- **Goal 6:** Enhance enforcement to ensure safety and consumer protection for all, especially for ESJ communities.
- **Goal 8:** Improve training and staff development related to ESJ issues within the CPUC's jurisdiction [specifically focused on equitable evaluation].
- **Goal 9:** Monitor the CPUC's ESJ efforts to evaluate how they are achieving their objectives.

4 FINDINGS

4.1 Impact evaluation

This section presents evaluated energy (kWh and therm) and demand (kW) savings from local 3PP installations. We evaluated gross savings based on the validation of the appropriate application of measure package information programs used to claim savings and the verification of measures installed by the programs using online, telephone, and video surveys. We also used surveys among participants to estimate program attribution for installed measures through NTGRs. We applied these ratios to generate estimates of net savings.

4.1.1 Gross savings validation

Table 4-1 summarizes the results of the gross savings analysis for all seven programs across three PAs. As evident in the table, there were few meaningful discrepancies between savings claimed in the tracking data and savings detailed in corresponding California eTRM documentation. In cases where there were discrepancies between the eTRM measure package values and tracking data parameters, we adjusted the values in the tracking data to reflect the accurate eTRM values. These changes resulted in minor modifications of claimed gross savings. Some claims had discrepancies that did not affect gross savings, such as NTG ID and EUL, and those that did were ultimately inconsequential relative to total program savings. Summaries of tracking data correspondence with eTRM values by program are provided in Appendix D (section 6.3).

Table 4-1. Summary of local 3PP tracking data correspondence with eTRM values by PA

PA	Program	Count of claims	Claims with discrepancy ³⁵	kW GRR	kWh GRR	Therm GRR
SDG&E	Multifamily Program	8,099	1%	100%	100%	100%
	SDG&E Total	8,099	1%	100%	100%	100%
PG&E	Government and K-12 Comprehensive Program	13	8%	100%	100%	100%
	Multifamily Program	45	13%	100%	100%	100%
	PG&E Total	58	12%	100%	100%	100%
SCG	Community Language Efficiency Outreach Program	7,007	5%	96%	100%	100%
	Small and Medium Commercial EE Program	251	2%	-	101%	100%
	Residential Advanced Clean Energy Program	33,962	18%	100%	100%	100%
	Comprehensive Manufactured Home Program	8,682	13%	100%	100%	100%
	SCG Total	49,902	15%	100%	100%	100%

4.1.2 Installation verification

We used information collected during phone surveys among non-residential participants and participating property managers to verify measure installations in these sectors. We asked survey respondents if they received the measures recorded in the tracking data and if these were still in place. All property managers and commercial participants verified getting the measures provided in the tracking data. Based on these responses, we used the reported installation rates to calculate gross savings.

We collected data from sites representing about 90% of claimed public sector savings. All public sector survey respondents verified receiving the program measures, but one reported uninstalling 87 of the 137 lighting measures provided by the program due to compatibility problems. We adjusted the installation rate for this site, which resulted in public sector program installation rates of 99% for electricity and 98% for gas.

³⁵ Most discrepancies are due to NTG ID and building type mismatches. These had minimal impact on GRR.



We selected a subset of residential end user customers that installed measures (tankless water heaters, tank insulation, and smart thermostats) they can safely and easily verify for video (Blitzz) installation verification using the process outlined in section 3.3. Using the Blitzz tool, we verified the installation of 93% of claimed measures.

Table 4-2 summarizes the results of this effort. As the table indicates, we attempted video installation verification among 91 sites that received the listed measures and had usable phone numbers. We collected information from 29 of them, which resulted in a 32% response rate. We verified that 27 sites received the measures recorded in the tracking data indicating an installation rate of 93%. We used this information and gross savings validation to determine gross realization rates for installed measures by local 3PPs in PY2021.

Table 4-2. Blitzz call verification results

Measure	Total sample	Total responses	Confirmed install	Not installed	Installation rate
Tankless water heater	78	23	23	0	
Tank insulation	12	6	4	2	
Smart thermostat	1	0	0	0	
All	91	29	27	2	93%

4.1.3 Free-ridership and program attribution

Table 4-3 shows the NTG ratios for EE measures targeted at residential participants.³⁶ The table breaks out the ratios between residential participants who qualified as hard-to-reach (HTR) and those who did not. It shows that the NTG ratios were generally high, ranging from an attribution of 76% for HVAC indoor fan motor controllers to 96% for smart thermostats.³⁷

The table also shows that, with a couple of exceptions (duct sealing and pipe insulation), the NTG ratios were higher for the HTR participants than they were for the non-HTR participants. However, none of the differences between the HTR participants' NTG ratios and the non-HTR participants' NTG ratios were statistically significant. While program theory indicates that HTR customers need more assistance from energy efficiency programs than non-HTR customers, the current findings do not fully align with that theory. This may be because the programs generally reached customers that would not have participated without the programs.

Table 4-3. NTG ratios for measures targeted at residential customers

Measure	Population	Respondents	Attribution	Free-ridership
Faucet aerator	All	526	84.2%	15.8%
	HTR	156	87.1%	12.9%
	Non-HTR	370	83.0%	17.0%
HVAC duct test & seal	All	582	94.2%	5.8%
	HTR	167	93.8%	6.2%
	Non-HTR	415	94.5%	5.5%
HVAC indoor coil cleaning	All	50	91.3%	8.7%
	HTR	16	92.4%	7.6%
	Non-HTR	34	90.7%	9.3%
HVAC indoor fan motor controller	All	29	75.6%	24.4%
	HTR	8	79.6%	20.4%

³⁶ All NTG ratios are based on free-ridership estimates that are weighted by electric and gas PA gross savings claims (converted to Mbtu savings). The survey weights used to generate all NTGR are provided in Appendix G (section 6.7).

³⁷ The HVAC indoor fan motor replacement measure is only based on one respondent and needs additional investigation in future program years.

Measure	Population	Respondents	Attribution	Free-ridership
HVAC indoor fan motor replacement	Non-HTR	21	73.4%	26.6%
	All	2	100.0%	0.0%
	HTR	1	100.0%	0.0%
	Non-HTR	1	100.0%	0.0%
HVAC indoor fan repair	All	49	91.4%	8.6%
	HTR	15	92.5%	7.5%
	Non-HTR	34	90.7%	9.3%
HVAC refrigerant replacement	All	50	91.3%	8.7%
	HTR	16	92.4%	7.6%
	Non-HTR	34	90.7%	9.3%
Pipe insulation	All	497	87.7%	12.3%
	HTR	153	87.3%	12.7%
	Non-HTR	344	87.9%	12.1%
Showerhead	All	577	85.0%	15.0%
	HTR	207	85.5%	14.5%
	Non-HTR	370	84.7%	15.3%
Smart thermostat	All	470	95.8%	4.2%
	HTR	0	-	-
	Non-HTR	470	95.8%	4.2%
Tankless water heater	All	11	89.1%	10.9%
	HTR	2	97.5%	2.5%
	Non-HTR	9	88.2%	11.8%

Table 4-4 shows the NTG ratios for energy-efficient measures targeted at customers in multifamily buildings with a further breakdown of the ratios between HTR and non-HTR participants. It shows that NTG ratios for most multifamily measures were 95% or higher. The two exceptions are pipe insulation (64%) and tank insulation (76%). These insulation measures are often installed in the boiler rooms of multifamily buildings, and therefore it is possible that multifamily property managers have more economic incentive to implement these “common area” measures without program assistance than they do for measures installed in individually metered tenant units.

The sample sizes for most multifamily measures were small and therefore their NTG ratios should be interpreted and applied cautiously. However, while the samples were small, there was not much variance in the estimates. For example, for the water heater controls measure, all 21 respondents gave the program 100% attribution. The interviewees’ qualitative survey responses corroborated these high NTG ratios by pointing out the significant challenges they face in implementing these energy efficiency improvements without program assistance.

Table 4-4. NTG ratios for measures targeted at multifamily customers

Measure	Population	Respondents	Attribution	Free-ridership
Faucet aerator	All	2	95.0%	5.0%
	HTR	1	95.0%	5.0%
	Non-HTR	1	95.0%	5.0%
Indoor LED lighting	All	17	99.9%	0.1%
	HTR	3	100.0%	0.0%
	Non-HTR	14	99.9%	0.1%



Measure	Population	Respondents	Attribution	Free-ridership
Pipe insulation	All	12	64.4%	35.6%
	HTR	0	-	-
	Non-HTR	12	64.4%	35.6%
Showerhead	All	10	95.0%	5.0%
	HTR	1	95.0%	5.0%
	Non-HTR	9	95.0%	5.0%
Smart thermostat	All	5	100.0%	0.0%
	HTR	-	-	-
	Non-HTR	5	100.0%	0.0%
Tank insulation	All	12	75.5%	24.5%
	HTR	-	-	-
	Non-HTR	12	75.5%	24.5%
Water heater controls	All	21	100.0%	0.0%
	HTR	-	-	-
	Non-HTR	21	100.0%	0.0%

The DNV team also estimated NTG ratios for energy efficient measures targeted at non-residential customers such as steam traps, modulating gas valves for furnaces, tankless water heaters, and water heating controls. Table 4-5 shows that the NTG ratios for all the non-residential measures were high with steam traps having the lowest ratio of 80%. However, except for the modulating gas valve measure which had a sample size of 31 survey respondents, the samples for the other measures were very small (2-8 respondents). Therefore, their NTG ratios should be interpreted and applied cautiously.

Table 4-5. NTG ratios for measures targeted at non-residential customers

Measure	Population	Respondents	Attribution	Free-ridership
Boiler steam trap	Commercial	4	80.0%	20.0%
Modulating gas valve	Commercial	31	82.7%	17.3%
Tankless water heater	Commercial	2	89.3%	10.7%
Water heating controls	Commercial	8	98.8%	1.2%
Indoor LED lighting	Public	5	99.9%	0.1%

4.1.4 Total savings

Table 4-6 provides the expected (total gross claimed savings) and the achieved electric savings (total gross evaluated savings). Local 3PPs achieved approximately 5.8 GWh of gross electric savings, which is 94% of claimed gross savings (gross realization rate). Total gross savings were further adjusted to reflect the portion of savings that can be attributed to program influence (total net savings). Program attribution (evaluated NTGR) is higher than claimed attribution (claimed NTGRs). We calculated claimed NTGRs by dividing total claimed net savings by total claimed gross savings for each program. Our evaluation indicates that the PY2021 local 3PPs achieved net electric savings of 5.5 GWh.

Table 4-6. Local 3PP gross and net electric savings by program, PY2021

Program	Customer segment	Total gross savings (kWh)		Gross realization rate	Claimed NTGR	Evaluated NTGR	Total net evaluated savings (kWh)
		Claimed	Evaluated				
RZNET - SDGE4002	Multifamily	609,178	609,178	100.0%	63.2%	99.9%	608,638
	Mobile Home	1,249,037	1,162,896	93.1%	72.9%	90.5%	1,052,842
GK12 - PGE_Pub_009	Public	135,985	110,148	81.0%	85.6%	100.0%	110,148
MESP - PGE_Res_003	Multifamily	256,816	256,816	100.0%	60.0%	97.4%	250,135

Program	Customer segment	Total gross savings (kWh)		Gross realization rate	Claimed NTGR	Evaluated NTGR	Total net evaluated savings (kWh)
		Claimed	Evaluated				
CLEO - SCG3861	Single family	93,164	86,739	93.1%	95.1%	95.8%	83,092
SMCP - SCG3882	Commercial	-320	-323	101.0%			
Res ACE - SCG3883	Single family	2,503,356	2,330,710	93.1%	81.1%	95.0%	2,214,663
CMHP - SCG3884	Mobile Home	1,349,068	1,256,029	93.1%	76.9%	94.8%	1,190,600
All	All	6,196,283	5,812,193	93.8%	76.2%	94.8%	5,510,118

Table 4-7 provides the PY2021 local 3PPs' claimed gas savings and the savings that they achieved. The programs achieved 2,212,454 therms of gross gas savings, which is 98% of gross claimed savings (gross realization rate). Program attribution (evaluated NTGR) is higher than claimed. Our evaluation indicates that PY2021 local 3PPs achieved net gas savings of 1,705,346 therms.

Table 4-7. Local 3PP gross and net gas savings by program, PY2021

Program	Customer segment	Total gross savings (therms)		Gross realization rate	Claimed NTGR	Evaluated NTGR	Total net evaluated savings (therms)
		Claimed	Evaluated				
RZNET - SDGE4002	Multifamily	1,585,668	1,585,668	100%	63.6%	71.9%	1,140,706
	Mobile Home	125,363	116,717	93%	68.6%	87.6%	102,264
GK12 - PGE_Pub_009	Public	-1,287	-417	32%		100.0%	-417
MESP - PGE_Res_003	Multifamily	32,653	32,653	100%	60.0%	100.0%	32,653
CLEO - SCG3861	Single family	43,586	40,580	93%	73.1%	81.3%	32,988
SMCP - SCG3882	Commercial	64,077	64,077	100%	66.7%	85.3%	54,658
Res ACE - SCG3883	Single family	314,040	292,382	93%	76.1%	92.0%	268,992
CMHP - SCG3884	Mobile Home	86,776	80,791	93%	74.6%	91.0%	73,502
All	All	2,250,877	2,212,454	98%	66.3%	77.0%	1,705,346

4.2 Program profiles

In this section, we provide a brief description of each of the local 3PPs included in the evaluation along with a description of the identified peer programs.³⁸ We include a table that summarizes each program's key elements.

Residential Zero Net Energy Transformation Program (RZNET - SDGE4002): The Residential Zero Net Energy Transformation (RZNET) program focuses on complimentary audits, direct install measures, and advanced energy efficiency consultations among manufactured home and multifamily participants. It engages multifamily and manufactured home community owners, operators, and residents to get them on the path to zero net energy (ZNE).

The SW CALS Multifamily Energy Efficiency Rebate Program (MFEER - SDGE3207) was a precursor to RZNET. SDGE3207 offered direct install measures and midstream incentives to multifamily property managers and owners to install energy efficiency products for both common and dwelling areas of multifamily complexes.

Since approximately 80% of the customers that RZNET served were manufactured home customers, we selected a second program that served such households as a peer program. Res-Comprehensive Manufactured-Mobile Home Program (CMMH - SDGE3279) was a comprehensive energy program that offered direct install energy efficiency measures and

³⁸ As noted in the methods section, we included peer programs to benchmark the performance of local 3PPs and understand changes under this new program delivery mode. We identified peer programs for these purposes based on recommendations from PA staff and implementers who directed us to predecessor programs that treated similar classes of customers and offered similar measures.



education to manufactured home communities within SDG&E territory. We combined the data from SDGE3207 and SDGE3279 to compare the performance of these peer programs to the RZNET. A summary of the local 3PP and peer programs is in Table 4-8 below.

Table 4-8. SDG&E Residential Zero Net Energy Transformation Program (SDGE4002) and peer program profiles

Local 3PP / peer program	Targeted audience	Services provided	Outreach strategies	Program delivery
Residential Zero Net Energy Transformation Program (SDGE4002)	Multifamily and manufactured housing owners and customers. HTR/DAC customers.	ASHRAE ³⁹ Level 1 audits. Direct install – HVAC, water heating measures and lighting. Enrollment in demand response (DR) and ESA programs. Renewable technologies including solar PV and battery storage.	Canvassing, flyers, and door hangers. Conference and mobile home clubhouse presentations. Trade magazine advertisements.	Direct install visit with demand response enrollment invitation and ASHRAE Level 1 audits to put homes on ZNE path.
SW CALS Multifamily Energy Efficiency Rebate Program (SDGE3207)	Multifamily property managers and owners.	Direct install – lighting, building envelope, water heating, HVAC and appliances. Incentives via retailers, distributors, and contractors.	Print material and advertisements. Direct mail. Digital marketing. Trade shows and presentations to trade market organizations.	Direct install no-to-low-cost EE measures in common areas and dwelling units.
3P Res-Comprehensive Manufactured-Mobile Home Program (SDGE3279)	Manufactured home customers. HTR/DAC customers.	Direct install – heating and cooling upgrades, lighting, and aerators. EE education by contractor.	Meetings with park owners, managers, and residents. Work with local community organizations. Direct mail and telephone campaigns. Magazine advertisements.	Contractor direct install and education.

Government and K-12 Program (GK12 - PGE_Pub_009): The PG&E Government and K-12 Program is a new standalone program focusing on delivering energy savings to the public sector, including local government buildings and K-12 schools. It offers audits, technical assistance, and downstream and direct install measures that are designed for small, medium, and large public-sector customers. As a new program, it does not have a relevant peer or predecessor program. A summary of the local 3PP is in Table 4-9 below.

Table 4-9. PG&E Government and K-12 Comprehensive Program (PGE_Pub_009) program profile

Local 3PP / peer program	Target audience	Services provided	Outreach strategies	Program delivery
Government and K-12 Program (PGE_PUB_009)	Public-sector (federal and local government facilities and K-12 schools) within DAC and HTR communities.	Direct install measures. Incentives and financing. Audits and technical assistance.	Work with local government programs, community choice aggregators, regional energy networks, and community-based organizations.	Provide tailored EE and demand reduction services.

Multifamily Energy Savings Program (MESP - PGE_Res_003): The Multifamily Energy Savings Program (MESP) is a new retrofit program that offers flexible incentives to the multifamily sector, for buildings of 5 units or greater. The program offers cash incentives, DI and downstream measures, and encourages the installation of high efficiency equipment by offsetting their incremental cost.

MESP’s peer program was Multifamily Energy Efficiency Rebate Program (MFEER - PGE21003), which offered comprehensive energy measures to multifamily residential properties. In PY2020, it operated as a multifamily upgrade

³⁹ American Society of Heating, Refrigerating and Air-Conditioning Engineers.



program (MUP) and offered whole building retrofit to multifamily property participants. A summary of the local 3PP and peer program is in Table 4-10 below.

Table 4-10. PG&E Multifamily Energy Savings Program (PGE_Res_003) and peer program profiles

Local 3PP / peer program	Targeted audience	Services provided	Outreach strategies	Program delivery
Multifamily Energy Savings Program (PGE_RES_003)	In PY2021, focused on Central Valley multifamily property managers, owners, and/or operators in PG&E's service territory. HTR/DAC customers and underserved regions.	Direct install – smart thermostats, aerators and showerheads, and heat pump water heaters. Customized outreach, technical services, and education. Flex incentives and financing options.	Mass market outreach. Promotion via trade professionals, community events. Partner with organizations like the California Apartment Association to connect with decision-makers.	Direct install and customized offerings.
Multifamily Energy Efficiency Rebate Program (PGE21003)	Multifamily property customers.	Whole-building energy efficiency upgrades.	Outreach to contractors. Direct outreach to multifamily accounts.	Site audits, energy savings projections, and installations.

Community Language Efficiency Outreach (CLEO - SCG3861): CLEO is a program that works largely with customers who have limited English abilities. It offers such customers free installation of a variety of direct install measures and provides energy efficiency education.

The prior program, CLEO SCG3762, also served customers with limited English abilities in SCG's and SCE's service territories. The program used marketing outreach to provide energy efficiency training, energy efficiency starter kits, no-cost direct install measures, and encouraged engagement with an online auditing tool. A summary of the local 3PP and peer program is in Table 4-11 below.

Table 4-11. SCG Community Language Efficiency Outreach Program (SCG3861) and peer program profiles

Local 3PP / Peer program	Targeted audience	Services provided	Outreach strategies	Program delivery
Community Language Efficiency Outreach (SCG3861)	Vietnamese, Indian, Chinese, Korean, Hispanic, and African American customers. HTR/DAC, low- and medium-income customers.	Direct install – bathroom and kitchen aerators, handheld tub spouts, smart thermostats, and hot water heater pipe sleeves. Added in 2021 - tankless water heaters, furnaces, and fireplaces.	In-language seminars, community booths, and toll-free hotline. Outreach via schools and community events. Door hangers. Social media.	Direct install of EE measures. Information on EE and other programs. Education via seminars, events, brochures, and website.
Community Language Efficiency Outreach (SCG3762)	Vietnamese, Indian, Chinese, Korean, Hispanic, and African American customers. HTR/DAC, low- and medium-income customers.	Direct install – smart thermostats, aerators, low flow showerheads, tub-spout diverters, and hot water heater pipe sleeves.	In-language seminars, community booths, and toll-free hotline. Outreach via schools and community events.	Direct install of EE measures. Education via outreach events. Direct participants to other resource programs.

Small and Medium Commercial EE Program (SMCP - SCG3882): The Small and Medium Commercial EE Program is designed for small and medium commercial businesses, including restaurants, lodging, dry cleaning, retail, and offices. It offers incentives to help businesses achieve energy savings.

COM-Direct Install Program was a direct install program that targeted small and medium commercial businesses and provided no-cost or low-cost retrofits. It sought to achieve energy and water savings. A summary of the local 3PP and peer program is in Table 4-12 below.

Table 4-12. SCG Small and Medium Commercial EE Program (SCG3882) and peer program profiles

Local 3PP / peer program	Targeted audience	Services provided	Outreach strategies	Program delivery
Small and Medium Commercial EE Program (SCG3882)	Small and medium commercial customers in San Bernardino and Riverside counties with annual therm usage up to 50,000 therms. HTR/DAC customers.	Direct install – aerators, boiler steam traps, modulating gas valves, pipe and tank insulation, tankless water heaters, and water heating controls. On-bill financing.	Email campaigns. Trade ally referrals. Outreach to previous EE program participants.	Deliver mix of EE kits, direct install, and rebate measures.
COM-Direct Install Program (SCG3805)	Commercial HTR/DAC customers. High usage, underserved, businesses in low-income communities.	Direct install – Pipe and tank insulation, aerators, and showerheads. Energy efficiency assessments and education.	Promotional events, canvassing, and contractor outreach. Partner with other IOUs and municipal utilities.	Partner with existing direct install programs to deliver gas savings measures.

Residential Advanced Clean Energy (Res ACE - SCG3883): SCG Residential Advanced Clean Energy is a downstream direct install program that serves single-family owners and renters. It partners with local agencies and other IOUs to offer enhanced services.

Its peer program, Residential Direct Install Program (RESDI - SCG3820) offered audits, direct install measures, and enrollment in additional programs. The program partnered with other municipal services to deliver energy efficiency measures to participating customers. A summary of the local 3PP and peer program is in Table 4-13 below.

Table 4-13. SCG Residential Advanced Clean Energy Program (SCG3883) and peer program profiles

Local 3PP / Peer program	Target audience	Services offered	Outreach strategies	Program delivery
Residential Advanced Clean Energy (SCG3883)	Single family customers. HTR/DAC customers.	Direct install – Duct test and seal, smart thermostat, kitchen and bathroom aerators, showerheads, and pipe wrap. Advanced clean technologies – water heater, gas fireplace insert, furnace, and tankless water heaters.	Intelligent canvassing using mapping tools. Flyers/door hangers. Inbound calls and web inquiries. Social media.	Qualify sites, plan project, and enroll customers. After DI, offer a no-cost walkthrough audit for deeper savings.
Residential Direct Install Program (SCG3820)	Single and multi-family customers. Middle-income, HTR and DAC communities.	Direct Install – smart thermostat, duct test and seal, kitchen and bathroom faucet aerators, shower and tub measures, and pipe wrap. Energy efficiency education.	Direct marketing. Website. Word-of-mouth.	Qualify sites, plan project, and enroll customers. Give customers the opportunity to install additional EE improvements.

Comprehensive Manufactured Homes Program (CMHP - SCG3884): CMHP is a residential advanced clean energy program that offers audits, direct install measures, and advanced clean energy opportunities through co-payment. It serves HTR and DAC manufactured home customers in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and Imperial counties.

The program that ran prior to CMHP was the Res-Manufactured Mobile Home (SCG3765) program, which also targeted manufactured customers and was implemented by Synergy. It provided energy efficiency education, incentives, and direct install measures. A summary of the local 3PP and peer program is in Table 4-14 below.



Table 4-14. SCG Comprehensive Manufactured Home Program (SCG3884) and peer program profiles

Local 3PP / Peer program	Targeted audience	Services provided	Outreach strategies	Program delivery
Comprehensive Manufactured Homes Program (CMHP)	HTR and DAC mobile home customers in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and Imperial counties.	Direct install – HVAC and water heating technologies. Walkthrough audits. ESA eligibility screening and measures (if eligible).	In-person meetings, phone calls, emails, and webinars. Distribution of flyers and door hangers.	Enroll customers in-person or virtually. Direct install measures. Invite customers for walkthrough audit and additional EE offers.
RES- Manufactured Mobile Home (SCG3765)	HTR manufactured and mobile home customers.	Direct install – duct test and seal, water heating measures. Energy efficiency educational materials.	Direct mail, outreach to communities, property owners, and managers. Distribution of flyers and brochures.	Measures installed by technicians. After installation, customers are offered energy savings educational materials and training.

4.3 Participant characterization

This section provides an overview of the types of customers local 3PPs served in PY2021, including the demographic profile of participants and the level of energy insecurity they faced. It also provides an analysis of the extent to which the programs served HTR and DAC customers. This analysis includes a comparison of HTR and DAC status of local 3PP participants with those of identified peer programs.

4.3.1 Local 3PP participant profiles

We used surveys that we administered among residential and non-residential end users and property managers to gather information on PY2021 local 3PP participants. We used these data to build participant profiles on occupants and buildings in residential programs, and businesses and public facilities in non-residential programs. Characteristics covered in each survey are listed in Table 4-15.

Table 4-15. Demographic/firmographic variables in participant surveys

Residential end user	Non-residential end user
Home ownership	Facility purpose
Race	Building ownership
Income	Number of employees
Employment	Square feet
Energy insecurity	Language

Residential end user profiles: Local 3PP residential participants in PY2021 lived in either single family or mobile homes and were the decision-makers for participation.

Figure 4-1 summarizes the profile of residential end user participants by HTR status. As the figure indicates, a majority of HTR local 3PP participants identify as Hispanic, while a majority of non-HTR participants identify as white. A high proportion of HTR and non-HTR participants reported being homeowners, with higher ownership among non-HTR compared to HTR participants. Based on self-report, the median income for HTR and non-HTR residential participants was \$25,000 to \$49,000 in PY2021. However, a higher proportion of non-HTR participants were in higher income brackets than HTR participants, with 7% of HTR versus 30% of non-HTR participants reporting median incomes above \$75,000.



Figure 4-1. PY2021 profile of local 3PP residential end user participants by HTR status

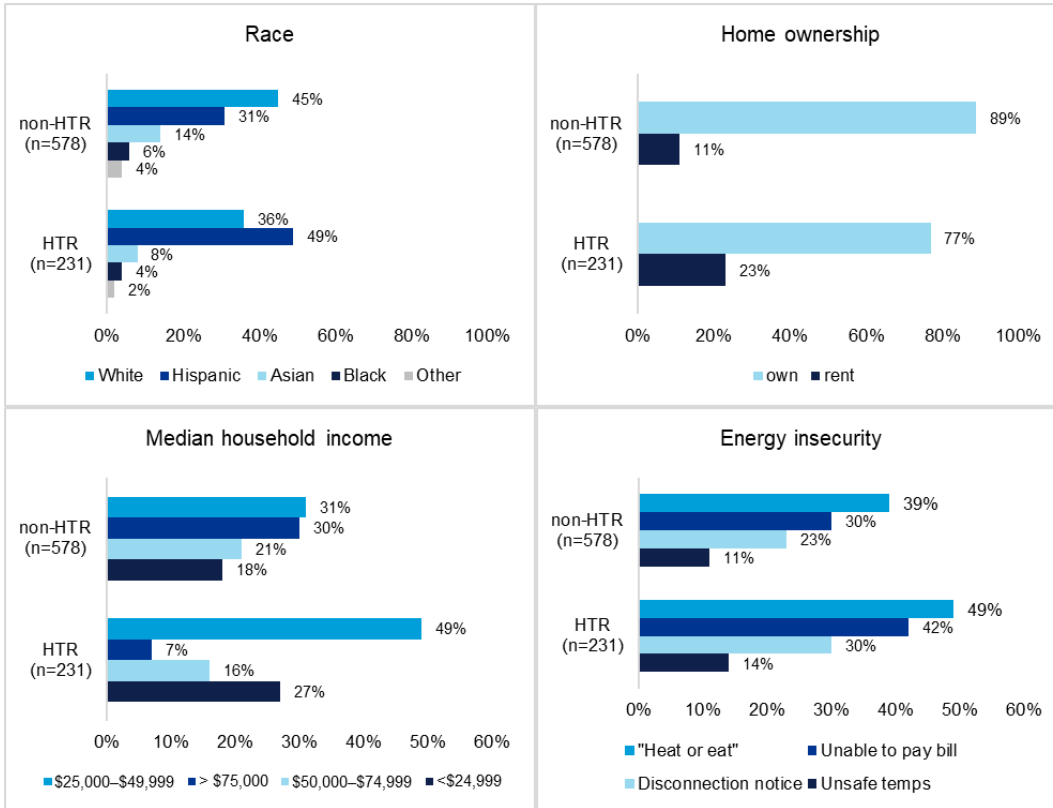


Table 4-16 lists the self-reported characteristics of residential participants by program. Characteristics where there are substantial differences between HTR and non-HTR participants report percentages for both. Besides the characteristics already indicated above, general residential trends indicate that a majority of participants in mobile homes are retired whereas those in single family homes are in the labor force. Moreover, up to 53% of HTR and 28% of non-HTR residential participants reported keeping their homes at unsafe temperatures and one-third had difficulty paying their utility bills in the last 12 months.

Table 4-16. PY2021 local 3PP residential end user participant characteristics by program

Category / Program	Most common characteristics of residential end user participants							
	HTR status	Own home	Race	Median income	Retired	Unsafe temp	Pay utility bill	Heat or eat
Statewide values ^{40 41}	All	55%	71% white	\$84,097	30% ⁴²	16%	15%	21%
13.2 million households								
RZNET - SDGE4002	HTR		81% white		70%	53%		33%
44 mobile home respondents	Non-HTR	96%	87% white	\$25,000 - \$49,999	79%	19%	10%	17%
CLEO - SCG3861	HTR	72%	51% Hispanic	\$25,000 - \$49,999	31%	37%	37%	52%

40 United States Census Bureau, "QuickFacts California," census.gov, <https://www.census.gov/quickfacts/fact/table/CA/PST045221>

41 United States Census Bureau, "Household Pulse Survey Data Tables," census.gov, <https://www.census.gov/programs-surveys/household-pulse-survey/data.html>

42 Households with one or more people 65 years and over, ACS Table DP02



Category / Program	Most common characteristics of residential end user participants							
	HTR status	Own home	Race	Median income	Retired	Unsafe temp	Pay utility bill	Heat or eat
183 respondents	Non-HTR	86%	41% Asian		28%		17%	37%
Res ACE - SCG3883	HTR	66%	61% Hispanic	\$25,000 - \$49,999	34%	40%	39%	58%
512 respondents	Non-HTR	88%	41% white		26%		42%	
CMHP (SCG3884)	HTR	93%	48% white	\$25,000 - \$49,999	57%	15%	35%	39%
70 respondents	Non-HTR	97%	59% white		68%	28%	27%	44%

Multifamily program participant profiles: We also collected information on multifamily participants by surveying property managers responsible for the decision to participate in such programs. The survey collected information on building affordability by asking property managers the percent of rental units that were market rate, available for income-qualified (low-income) renters, or a mix of the two. The survey also collected information on building vintage and type.

Table 4-17 summarizes building characteristics based on this survey. The results indicated that 42% and 62% of housing units in PG&E's and SDG&E's participating multifamily buildings respectively were market rate, with the remaining units serving a mix of renters and income-qualified residents. Assuming a third of the mixed and senior rental units were for income-qualified or low-income households,⁴³ DNV's calculations indicate that the programs served multifamily buildings with approximately 15-20% low-income households. Given that IOU billing data generally indicate 35% of households to be on CARE, there are gaps in the multifamily programs' reach of such populations.

Table 4-17. PY2021 local 3PP multifamily participant building characteristics by program

Building characteristics		MESP - PGE_Res_003 (n=38)	RZNET - SDGE4002 (n=56)
Housing affordability	Market rate units	42%	62%
	Mixed units	58%	15%
	Senior units	0%	20%
	Income qualified units	0%	3%
	Calculated market rate units	81%	85%
	Calculated low-income units	19%	15%
Building vintage	Before 1940	39%	5%
	1940 - 1989	51%	62%
	After 1990	10%	33%
Building type	Apartment or condo (5 or more units)	97%	80%
	Apartment or condo (2-4 units)	3%	13%
	Townhouse/duplex/row house	0%	7%

We also surveyed non-residential end users, composed of commercial and public sector participants, to collect information on their activities, facilities, and sizes. Table 4-18 provides a profile of these participants. Small hotels and dry cleaners made up a sizeable portion of commercial sector participants. The businesses operated in relatively small, rented spaces covering less than 5,000 square feet. They employed less than 25 people that speak English, Spanish, and South Asian

⁴³ According to the National Low Income Housing Coalition (NLIHC), in 2020, approximately 33% of California's rental homes were affordable and available to households whose income was 50% of the area median income (i.e., low income households). <https://nlihc.org/housing-needs-by-state/california>



languages in the workplace. The public sector program served multiuse public buildings and K-12 schools. Public sector program participants operated in large buildings they owned, covering more than 10,000 square feet. The majority employed over 25 people that primarily spoke English in the workplace.

Table 4-18. PY2021 local 3PP non-residential end user participants by program

Program	Source	Most Common Characteristics of Non-Residential End user Participants
Government and K-12 Comprehensive Program (PGE_Pub_009)	Purchased third-party data and evaluation survey	<ul style="list-style-type: none"> • K-12 schools or multiuse public buildings • 100% own building • 58% have 25+ employees • 67% of buildings have >10,000 square feet • 100% have fluent English speakers
Small and Medium Commercial EE Program (SCG3882)		<ul style="list-style-type: none"> • 89% small hotels or dry cleaners/laundry • 68% lease building • 100% have < 25 employees • 81% of buildings have <5,000 square feet • 48% have fluent English speakers

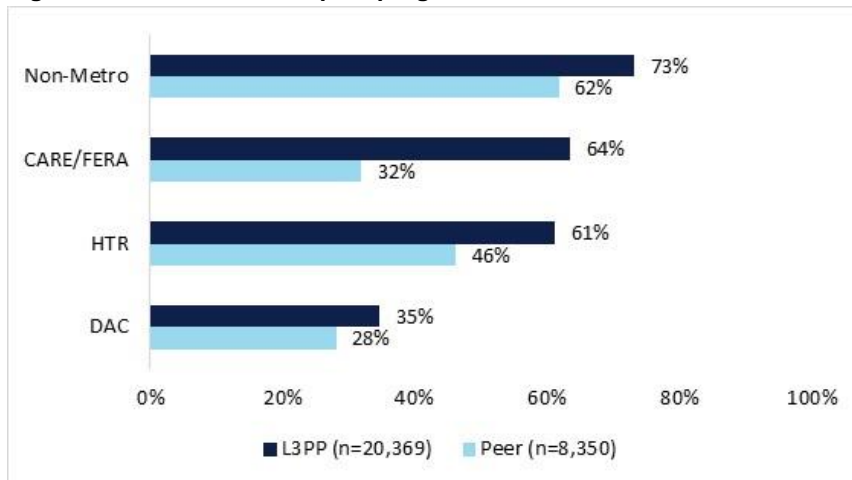
4.3.2 Profiles relative to peer programs

In this section, we analyze participant characteristics relative to peer programs. This analysis is based on customer information system (CIS) and American Community Survey (ACS) data. The CIS provides data on individual participant characteristics while ACS provides data on participant locations at the census block group level. The information we collected for the analysis based on these data include:

- Percent of participants on the CARE or FERA rate
- Percent of participants that are HTR
- Percent of participants living outside of CBSA metro areas
- Percent of participants living in an area classified as DAC
- Average CalEnviroScreen score of participants

As an aggregate, and for most of the programs individually, the local 3PPs were able to reach a greater proportion and greater volume of HTR and DAC customers than the peer programs (Figure 4-2).

Figure 4-2. Local 3PPs and peer program customer characteristics





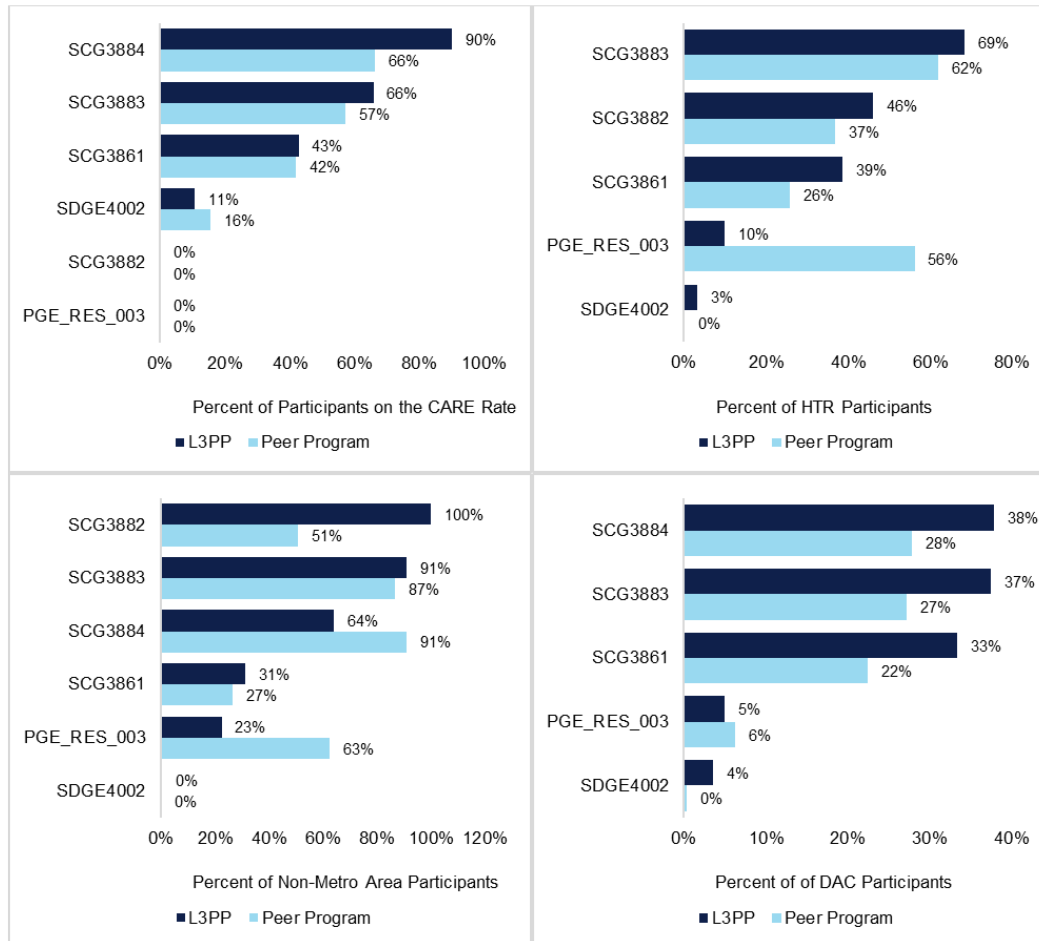
The panels in Figure 4-3 compare the HTR, DAC, CARE and non-metro status of local 3PPs and their peer counterparts. The top left panel indicates the percentage of customers on the CARE rate. It is evident that all local 3PPs except for SDG&E served a higher proportion of customers on CARE than peer programs. We could not determine the CARE status of participants in PG&E’s multifamily programs because the program mostly provided utility IDs for common areas instead of end users.

The top right panel compares the percentage of HTR customers that local 3PPs served compared to peer programs. It indicates that all but PG&E’s multifamily local 3PP served more HTR customers than peer programs. PG&E’s multifamily local 3PP reached a significantly lower proportion of HTR customers than its peer counterpart (10% versus 56%).

The bottom left panel indicates that the majority of local 3PPs had more non-metro area participants than peer programs. The figure also provides the reason why PG&E’s multifamily program (PGE_RES_003) served fewer HTR participants than its peer counterpart. Compared to its peer program, this program served fewer non-metro area participants (23% versus 60%), which is one of the primary defining characteristics for HTR designation.

The bottom right panel figure compares the level of participation among DACs in local 3PPs and peer programs. As the figure indicates, all local 3PPs reached a higher percentage of customers in DACs than peer programs except PG&E’s multifamily local 3PP, which served a slightly lower proportion of customers in DACs than its peer counterpart.

Figure 4-3. Local 3PPs and peer program customer characteristics by program

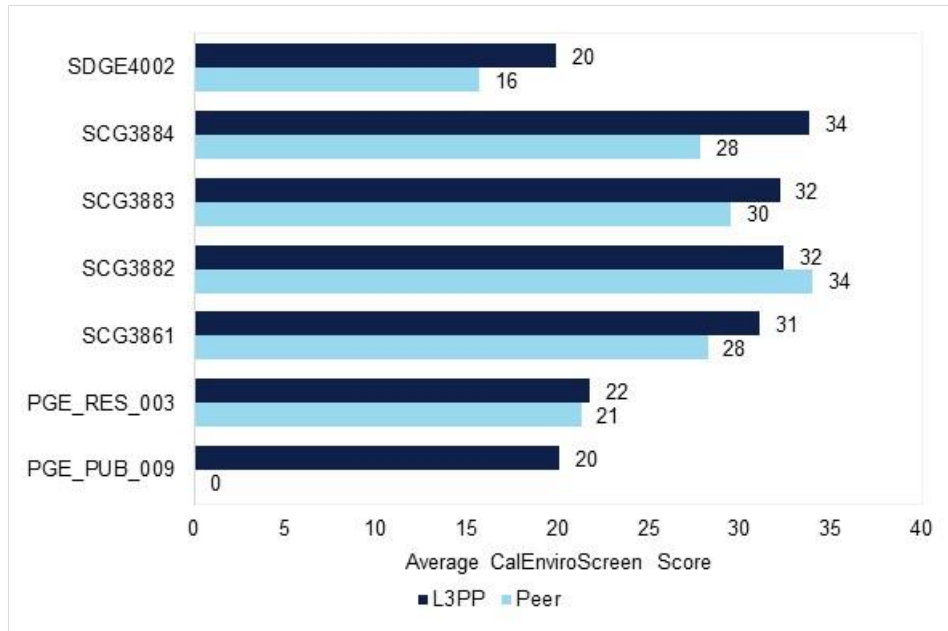




We also examined CalEnviroScreen scores, which are the basis of DAC status, to compare local 3PP and peer program performance. These scores provide a single, quantitative comparison of the environmental vulnerability of different areas in California, with higher scores indicating higher vulnerability.

Figure 4-4 indicates that local 3PP participants resided in areas with equal or greater average CalEnviroScreen scores than peer program participants. As the figure shows, two local 3PPs (SDGE4002 and SCG3884) have much higher average scores than their peers. The rest have scores that are about the same as their peers.

Figure 4-4. Average CalEnviroScreen score by local 3PP and peer program

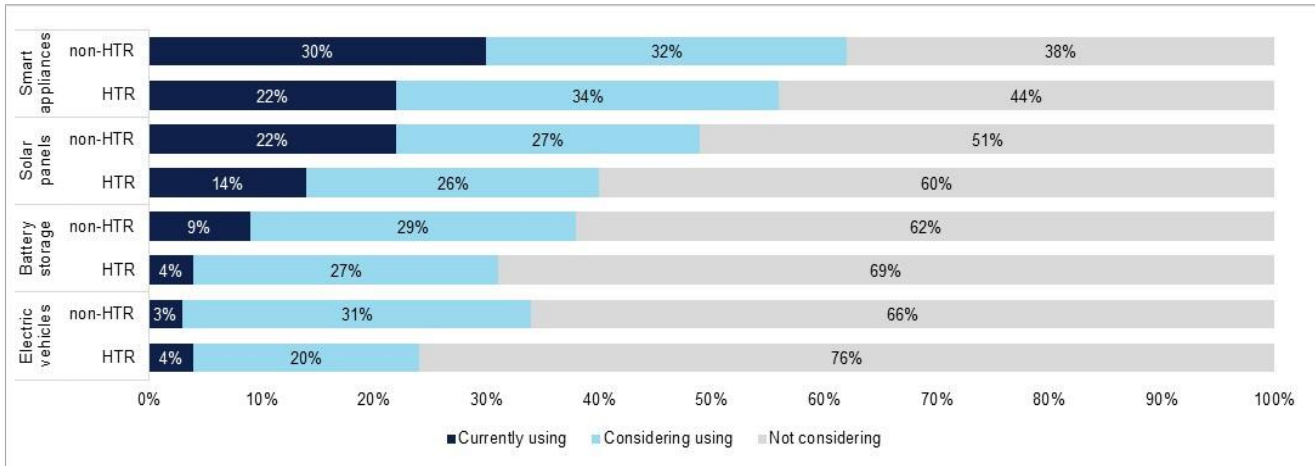


4.3.3 Participant interests

We investigated participants' openness to additional energy efficiency improvements by examining the current and future clean technology adoption of residential and non-residential end users.

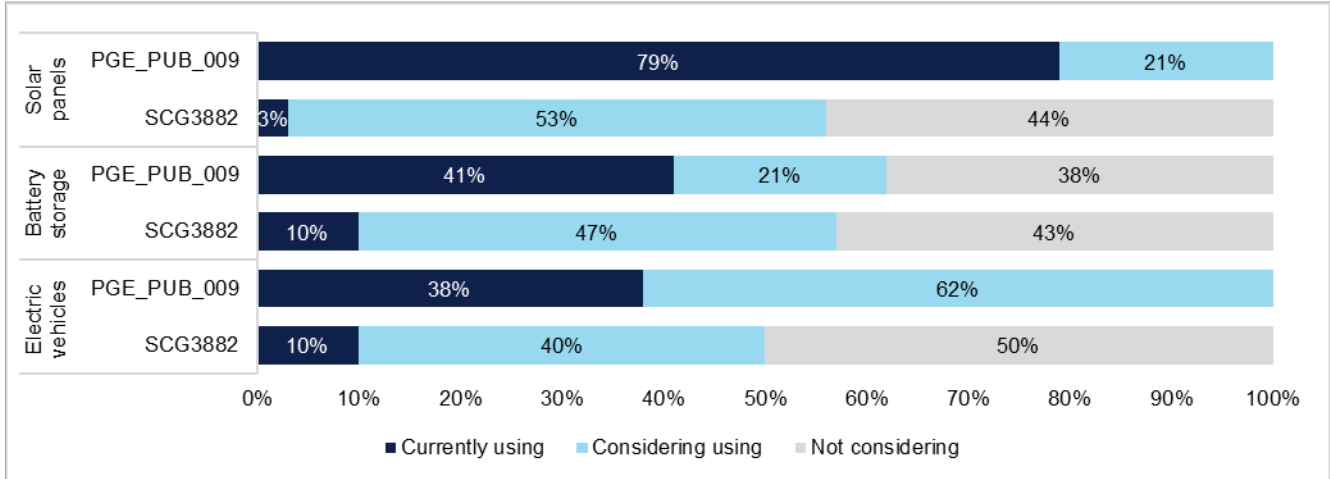
We asked residential end users to indicate technologies they were using or plan to adopt in the next two years. Figure 4-5 indicates that smart appliances and solar panels were the most favored technologies among both the HTR and non-HTR populations. Although electric vehicles (EVs) and battery storage were not as prevalent, at least 20% of participants indicated an interest in future adoption. However, reflecting historic gaps in access and affordability, HTR participants were less likely than non-HTR participants to be considering using EVs in the near future. The current usage of EVs was equivalent between the two groups, but the gap in those considering EV adoption was much greater than the gap for the other technologies. This difference could reflect real or perceived differences in affordability and access to EVs among HTR populations.

Figure 4-5. Residential HTR and non-HTR participants’ current and planned future adoption of other clean technologies



We also wanted to determine how open non-residential participants were to adopting clean technologies. As Figure 4-6 summarizes, the public sector participants have already adopted such technologies (particularly solar panels and EVs) at a higher rate than the small and medium commercial program participants. These differences are likely due to the firmographic differences between the participants in these two programs. PG&E’s public sector program enrolls large, institutional, owner-occupied buildings. The situational factors for these participants are much more amenable to these technologies than the small and medium program participants, who tend to be small businesses that lease their space.

Figure 4-6. Non-residential program participants’ current and planned future adoption of other clean technologies



4.4 Program performance

This section provides our evaluation of the program design, marketing and outreach, and program delivery of the PY2021 local 3PPs. For these analyses, we relied on evaluating each program element’s performance relative to its goal, and where possible, relative to the peer programs. In the sections below, we first address program design, followed by program marketing and outreach, and analyses of various features of program delivery.

We also provide a discussion of program innovations and key performance indicators (KPIs) that the programs used to track progress.

4.4.1 Program design

The California Evaluation Framework laid out guidelines that energy efficiency programs should follow to ensure their success. It prescribed that energy efficiency undertakings develop a program theory, which provides clearly defined goals and planned activities to help achieve these goals.⁴⁴ The framework also recommended that a comprehensive program theory identifies the barriers a program intends to address along with strategies to address these barriers.

To evaluate the program design of PY2021 local 3PPs, we examined the program theory that each of these programs provided in their implementation plans. We reviewed if each local 3PP’s program theory included clearly stated goals and objectives and laid out the barriers the program intended to address. Table 4-19 provides a summary of these theories.

Table 4-19. Summary of PY2021 local 3PP goals and barriers

Program	Goals and objectives	Barriers
RZNET - SDGE4002	Improve energy efficiency among multifamily properties and manufactured homes	<ul style="list-style-type: none"> • Tenant/landlord split incentives • Complexity of energy efficiency programs
GK12 - PGE_Pub_009	Improve the energy efficiency of public sector buildings, including local and federal government buildings and K-12 schools	<ul style="list-style-type: none"> • Limited funding for energy efficiency projects • Complex procurement processes • Lack of visibility into energy use • Limited staff available to engage in energy efficiency
MESP - PGE_Res_003	Improve energy savings among underserved multifamily properties and provide deeper retrofits to large and newer properties	<ul style="list-style-type: none"> • Tenant/landlord split incentives • Several layers of decision makers • Inadequate technical expertise • Low priority of energy efficiency • Funding barriers
CLEO - SCG3861	Provide energy efficiency services (including in-language training and direct installations) among communities whose primary language is not English	<ul style="list-style-type: none"> • Language barrier • Lack of customer awareness about energy efficiency benefits • Lack of funds required for energy efficiency
SMCP - SCG3882	Help small and medium businesses (such as dry cleaners, hotels and motels, retail spaces, and restaurants) be more competitive by increasing their energy efficiency	<ul style="list-style-type: none"> • Financial barriers faced by small and medium businesses that lack access to capital
Res ACE - SCG3883	Improve the energy efficiency of single-family homes and help drive deeper savings among this customer segment	<ul style="list-style-type: none"> • High cost of home retrofits
CMHP - SCG3884	Improve the energy efficiency of manufactured homes and help drive deeper savings among this customer segment	<ul style="list-style-type: none"> • High cost of home retrofits

All programs have well-identified goals and often provide umbrella goals and specific sub-goals. All programs cite energy efficiency as their primary goal. They also have identified barriers that pose challenges to participation and proposed solutions to address these. The programs identified funding or financial barriers, lack of knowledge and expertise, and

⁴⁴CALMAC, "The California Evaluation Framework," calmac.org, June 2004, https://www.calmac.org/publications/California_Evaluation_Framework_June_2004.pdf



complex decision-making because of split incentives or organization structures as the main barriers to participation. It is evident that the programs have considered these important design elements carefully.

4.4.2 Program outreach and marketing

This section provides a discussion of the PY2021 local 3PPs marketing and outreach activities and an assessment of the relative success of these activities.

4.4.2.1 Marketing and outreach activities

We gathered information from PIPs and implementer interviews to identify the marketing methods each local 3PP used to generate program awareness and encourage participation in PY2021. We highlight the strategies that implementers identified as working best for this purpose.

SDG&E's Residential Zero Net Energy Transformation Program (SDGE4002) used several marketing strategies in PY2021. These included flyers and canvassing, clubhouse presentations in mobile home communities, mobile home trade magazine advertisements, and commercials during an annual mobile home conference. To reach multifamily properties, the implementer identified multifamily sites using a San Diego County database and contacted them through phone calls and emails. The program found direct outreach to be the most reliable method for enrolling program participants because a representative would speak directly with the customer answering questions, resolving doubts, and clarifying program value.

PG&E's Government and K-12 Comprehensive Program (PGE_PUB_009) initially used data analytics to identify (customers likely to participate) and engage potential participants. This approach did not prove fruitful and required program changes halfway through PY2021. The implementer found that the best outreach methods involved direct contacts and partnerships with community leaders and local government bodies. It supplemented these approaches with email campaigns to reach its target market segment. The program still used data analytics to complement its engagement activities instead of as the primary method for outreach and education.

PG&E's Multifamily Energy Savings Program (PGE_RES_003) used different outreach strategies in PY2021, including magazine advertisements, direct mail, email campaigns, and phone calls. Program staff also knocked on doors and reached out to previous participants that had only installed a single measure. The program also contacted installation contractors to inform them about the program and its ability to reduce customer measure costs. Generally, the program found vendors and other traditional direct communications (such as knocking on doors) to be the most successful means of reaching participants.

SCG's Community Language Efficiency Outreach Program (SCG3861) program used various marketing methods, including newspaper and radio ads, social media, participation in community-based organization activities, in-language seminars, community booths, and school outreach programs to meet its participation KPI targets. It also used direct outreach, including door hangers and door-to-door canvassing within the target communities. The implementer identified direct outreach to be the most effective driver of participation.

SCG's Small and Medium Commercial EE Program (SCG3882) used email campaigns augmented with cold calls among prospective customers and outreach to previous program participants to market its program. As part of the email campaigns, the program offered no-cost kits. This effort did not provide the anticipated results. As a result, the program pivoted mid-year to lean on existing relationships with trade allies for outreach. Customer outreach through trade allies increased enrollments and has been the most successful marketing course for the program.

SCG's Residential Advanced Clean Energy Program (SCG3883) marketed the program using intelligent direct outreach, where Energy Specialists contact eligible households identified using an iPad-hosted mapping system, social media, and



email marketing. It found direct communication, using intelligent direct outreach, to be the most successful marketing strategy. It also obtained positive upticks from its web and social media presence.

SCG’s Comprehensive Manufactured Home Program (SCG3884) used clubhouse presentations in mobile home communities, community newsletters, door hangers and canvassing, relationships with community leaders, and social media as part of its outreach activities. The implementer found that this market segment was not responsive to social media, and direct outreach and communication with customers were the best outreach methods.

4.4.2.2 Assessment of local 3PPs outreach and marketing

Table 4-20 provides a broad summary of the outreach methods used by the programs, including the approaches that program implementers identified as being most successful. It also indicates if programs used KPI metrics to track the success of their marketing and outreach efforts.

Table 4-20. Local 3PP outreach and marketing methods in PY2021

Program	Broad outreach methods	Successful outreach strategies	Participant reported and preferred outreach method	KPI tracking outreach
RZNET - SDGE4002	Community engagement Direct outreach	Direct outreach through canvassing	Direct outreach through canvassing (mobile homes) Phone, email, or mail (Property managers)	✓
GK12 - PGE_Pub_009	Call centers/phone calls Data analytics Email campaigns Partnerships with community leaders	Partnerships with community leaders and local government bodies	Direct interaction with program staff Email	
MESP - PGE_Res_003	Call centers/phone calls Direct mail campaigns Email campaigns Implementation contractor referrals Outreach to previous program participants Print media campaigns	Direct outreach through canvassing Implementation contractor referrals	Online or print media Management	
CLEO - SCG3861	Email campaigns Implementation contractor referrals Outreach to previous program participants	Implementation contractor referrals	Direct interaction with program staff Referrals from public agencies Bill insert	
SMCP - SCG3882	Community engagement Direct outreach Implementation contractor referrals Print media campaigns Social media campaigns	Implementation contractor referrals	Bill insert IOU website	✓
Res ACE - SCG3883	Direct outreach campaigns Email campaigns Referrals from other	Direct outreach through canvassing	Bill insert Canvassing	



	participating customers Social media campaigns			
CMHP - SCG3884	Community engagement Direct outreach Partnerships with community leaders	Direct outreach through canvassing	Bill insert Canvassing	

Source: Implementer interviews and IOU KPI metrics; participant surveys informed the participant preferred outreach modes

Direct is successful: Most programs did not report marketing-related KPIs indicating the approaches that have led to successful outreach efforts. However, program implementers often mentioned direct outreach as a successful approach to market programs to utility customers. Most implementers reported that targeted marketing and outreach, where program staff interact or communicate with customers/decision-makers directly, helped convert prospective customers into participants most frequently. The other successful outreach efforts mentioned included partnerships with community leaders and implementation contractor referrals, which are forms of direct communication.

Pivot when necessary: The public sector program implementer had to pivot its outreach and marketing activities, which relied on data analytics to identify prospective participants. This outreach approach was ineffective and required the implementer to shift its approach to building partnerships with local actors and government bodies to promote the program and increase participation. Similarly, the commercial program had to change its outreach approach, which involved emails and providing kits. This approach had limited success and required a shift to different tactics, primarily promoting the program through trade ally networks.

Lessons from the past: Some programs, such as the PG&E public sector program, were new standalone initiatives, whereas others, such as those targeting mobile homes, were based on legacy programs. For programs that existed in prior years in the same or similar form, the marketing and outreach activities were mainly the same as what they employed in the past. However, program implementers noted a shift in what they communicated with customers that emphasized a transformational rather than a transactional approach to energy efficiency. This shift aimed to transform consumer behavior towards clean energy rather than just offering a one-time focused measure installation.

It is important to measure outreach performance: Participant survey responses corroborated some of the successful outreach strategies mentioned by implementers. However, the surveys also indicated that other means, particularly bill inserts and communication with program staff, were integral and preferred ways of receiving communication about programs. The additional methods identified by survey respondents as helpful underscore the need for KPIs to identify successful outreach methods.

4.4.3 Program delivery

We report on program delivery outcomes by examining program costs and savings, depth of retrofit, cost effectiveness, program tracking data quality, and participant experience.

4.4.3.1 Program cost and savings

In the subsections that follow, we compare program costs and savings relative to goals and peer programs to gauge the effectiveness of one aspect of local 3PP delivery.

Local 3PP cost and energy savings relative to the goal

We evaluated the performance of local 3PP costs and savings by comparing each program’s goals to their realized values. The goals were captured by each program’s filed/planned amounts reported in CEDARS.⁴⁵ These filings were made prior to

⁴⁵ SMCP - SCG3882, Res ACE - SCG3883, and CMHP - SCG3884 did not report PY2021 filed budgets and net savings. DNV used PY2022 budget filings and 2021 net savings goals reported in KPI tables the PAs provided to calculate the values presented in this section.



the program year. The claimed/delivered values were also reported in CEDARS after the end of the program year. We compared the programs' filed or planned budgets to actual program spending, their filed or planned net savings to claimed/delivered net savings, and their cost effectiveness outcomes to filed values. We also examined the percentage of the program budget spent on overhead and outreach activities.

Table 4-21 presents an overview of each program's percent budget spent, percent of total spending on overhead activities, and first-year net energy savings claimed compared to filed/planned net savings. The table also provides measures of program cost effectiveness based on TRC values provided in CEDARS. The percentages of budgets programs spent and the energy savings programs claimed relative to planned levels gauge the programs' ability to deploy energy-saving measures according to plan. The portion of total spending on overhead activities reflects the effectiveness of such deployments.

Table 4-21. Overview of Local 3PPs cost and savings performance in PY2021

Program	Percent budget spent	Percent overhead without outreach	Percent outreach	Percent net kWh delivered	Percent net therm delivered	TRC
RZNET - SDGE4002	105%	6%	3%	42%	147%	1.1
GK12 - PGE_Pub_009	30%	37%	1%	7%	10%	0.2
MESP - PGE_Res_003	20%	44%	8%	7%	9%	0.3
CLEO - SCG3861	151%	5%	3%	41%	58%	0.2
SMCP - SCG3882	17%	15%	14%	28%	28%	1.1
Res ACE - SCG3883	112%	4%	3%	94%	94%	1.5
CMHP - SCG3884	65%	6%	3%	37%	37%	2.5

Source: CEDARS filings. Budget spent is defined as claimed total program cost relative to filed (planned) budget. Percent overhead without reach is defined as overhead minus outreach costs relative to total program cost. Percent outreach is defined as outreach costs relative to total program cost. Percent net kWh and therm delivered are defined claimed net kWh and therm savings relative to filed (planned) net savings.

As indicated in the table, while under-performance on energy savings goals is worse than the under-spending on budget, in general, programs that spent in line with planned amounts claimed energy savings close to what they expected to deliver. On the other hand, programs whose overall costs were lower than their planned budget claimed less than their planned energy savings. In addition, programs that spent no more than 15% on non-outreach overhead activities reported cost-effective operations.⁴⁶

As indicated in the preceding paragraph and table, local 3PPs whose total program delivery costs were lower than their planned budget had relatively high overhead spending, which may indicate that such programs were having trouble getting traction in the marketplace. On the other hand, the program that overspent relative to its planned budget (CLEO) had relatively low overhead spending. This program likely had more subscribers than could be accommodated with its planned budget. It appears that this program was successful in the marketplace and spent more to build on that success.

Local 3PP cost and savings performance relative to peer programs

We also examined the cost performance of local 3PPs relative to peer programs. Table 4-22 provides a scorecard with cost- and savings-related metrics for local 3PPs and the selected peer programs. The scorecard indicates that three local 3PPs had better, two had the same, and one had worse TRC values than the peer programs. The three local 3PPs with better TRC scores also performed better than their peers by spending close to their budgeted amounts and delivering savings close to filed or planned levels. These programs also spent no more than 10% of their overall budget on overhead activities.

⁴⁶ The exception is CLEO with overhead minus outreach cost that were 5% of overall budget. This program's total spending exceeded its planned budget and its TRC was below 1.



Table 4-22. Comparison of PY2021 Local 3PP and peer programs (PY2020) cost performance

Program	TRC		Spending/budget		Overhead cost per claimed savings		Percent net energy (MMBTU) delivered	
	Peer program	Local 3PP	Peer program	Local 3PP	Peer program	Local 3PP	Peer program	Local 3PP
RZNET - SDGE4002	0.5	1.1	68%	105%	15%	9%	33%	134%
GK12 - PGE_Pub_009		0.2		30%		38%		7%
MESP - PGE_Res_003	0.3	0.3	53%	20%	17%	52%	52%	8%
CLEO - SCG3861	0.2	0.2	32%	151%	13%	8%	44%	56%
SMCP - SCG3882	2.2	1.1	95%	17%	5%	29%	94%	28%
Res ACE - SCG3883	0.3	1.5	54%	112%	1%	7%	19%	122%
CMHP - SCG3884	1.2	2.5	68%	65%	29%	8%	141%	57%

A review of the performance of each program relative to its peer reveals the details that underlie the above general trends. SCG's Small and Medium Commercial EE Program (SMCP - SCG3882) program is the only PY2021 local 3PP with lower cost effectiveness than its peer program. Compared to its peer, it hardly spent any of its budget and realized a small fraction of its planned savings. At the same time, the proportion it spent on overhead was six times that of its peer. PG&E's Multifamily Energy Savings Program (MESP - PGE_Res_003) also spent only a relatively low percentage of its budget in PY2021, delivered an even lower proportion of its filed or planned savings, and had relatively high spending on overhead activities compared to its peer program. While we did not identify a peer program for PG&E's Government and K-12 Comprehensive Program (PGE_PUB_009), this program also underspent its budget, delivered lower than its filed or planned savings, and had a relatively high overhead spending, and a low TRC value.

It is evident that such programs were still taking time to get off the ground in PY2021. During interviews with DNV, the implementer and PA staff reported that these programs were still ramping up operations in their first contract year and were working to overcome difficulties with participant acquisition. The CPUC had anticipated that there would be four years of ramp-up or lead time for third-party programs. In its Decision 18-05-041, the commission recognized that third-party actors need time to design and implement programs over the 2018-2022 period.⁴⁷ It is evident that these programs need time to ramp up their program activities to be fully operational.⁴⁸ Thus, while the programs faced start-up challenges, these are not indicative of their potential for long-term success.

In contrast to the three local 3PPs, SCG's Community Language Efficiency Outreach (CLEO - SCG3861) program overspent relative to its budget by almost 50%. The program scaled its operations approximately 10-fold in PY2021; it spent approximately ten times as much and also delivered ten times as many savings as in the prior year. It also spent more on program implementation than on overhead activities relative to the previous year. While CLEO's PY2021 spending mix improved compared to its predecessor, with more spending on implementation and outreach, this has not resulted in improved TRC performance.

The remaining three programs, which delivered energy efficiency to single-family or manufactured home customers, fared better than their peer programs. They either spent close to their budget or underspent by a lower amount compared to their peer counterparts, delivered/claimed savings relatively close to filed or planned savings, had lower percent overhead spending, and had cost-effective operations with TRC values above 1.

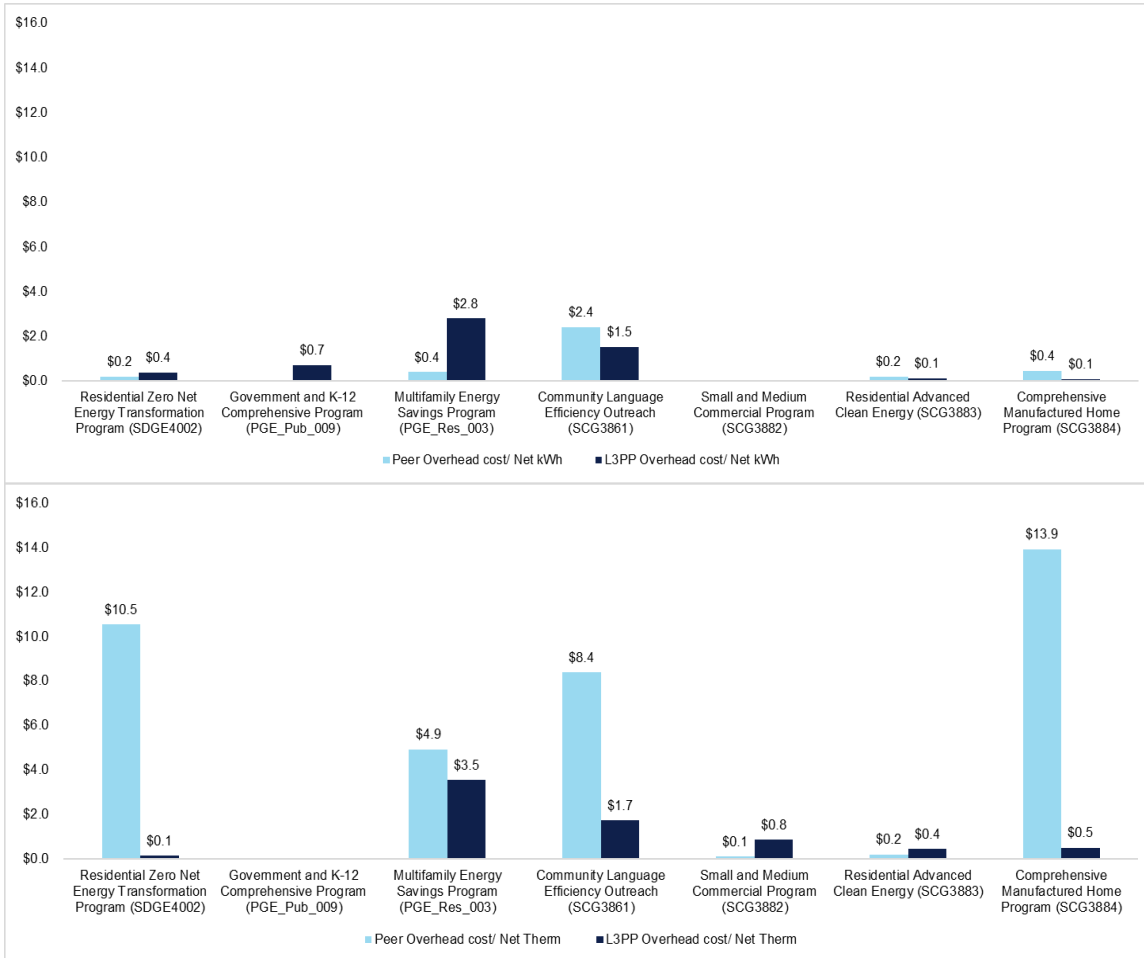
⁴⁷ CPUC, "Decision Addressing Energy Efficiency Business Plans," cpuc.ca.gov, May 31, 2018, <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M215/K706/215706139.PDF>.

The commission made provisions for a ramp period as energy efficiency programs transitioned to third-party program administration by lowering the PAs' portfolio-wide TRC.

⁴⁸ Further, during interviews program implementers also indicated that the lingering effects of the COVID-19 pandemic had exacerbated the ramp-up problems the programs faced.

The percent of total spending on overhead activities has a bearing on cost effectiveness and reveals the efficiency of program spending. The cost per unit of energy saved similarly indicates the efficiency of total program spending. Figure 4-7 provides the overhead cost per net kWh and net therm savings for PY2021 local 3PPs and the identified peer programs.

Figure 4-7. Overhead cost per net kWh and net therm of Local 3PPs and peer programs



Local 3PPs that were cost-effective in PY2021 had a lower overhead cost per unit of saved energy than local 3PPs that were not cost-effective. These include the three residential programs serving single-family and manufactured homes. These programs spent less on overhead per kWh and therms savings than the other PY2021 local 3PPs. The local 3PPs with relatively high overhead costs per unit of saved energy had challenges ramping up their operations in PY2021.

The local 3PPs also tended to have lower overhead spending per unit of saved energy than the peer programs. In general, the lower cost of conserved energy among local 3PPs in PY2021 indicates these programs have the potential to deliver more cost-effective energy efficiency services.

4.4.3.2 Cost Effectiveness Calculations

We calculated the local 3PPs' cost effectiveness based on evaluated savings using the Cost Effectiveness Tool (CET) available on the CEDARS website. The ratio of the combined benefits to the total resource cost quantifies the cost effectiveness of the programs and is summarized by the total resource cost (TRC) ratio.



We compared the evaluated TRC values with claimed TRC values for the local 3PPs filed in CEDARs. As indicated in Figure 4-8, the claimed values filed by the programs ranged from 0.18 for PG&E’s public sector program to 2.46 for SCG’s manufactured home program. The evaluated TRC values are at or above the claimed values, which is consistent with the high gross realization rates and program attribution.

Figure 4-8. Claimed and evaluated local 3PP TRC ratios, PY2021

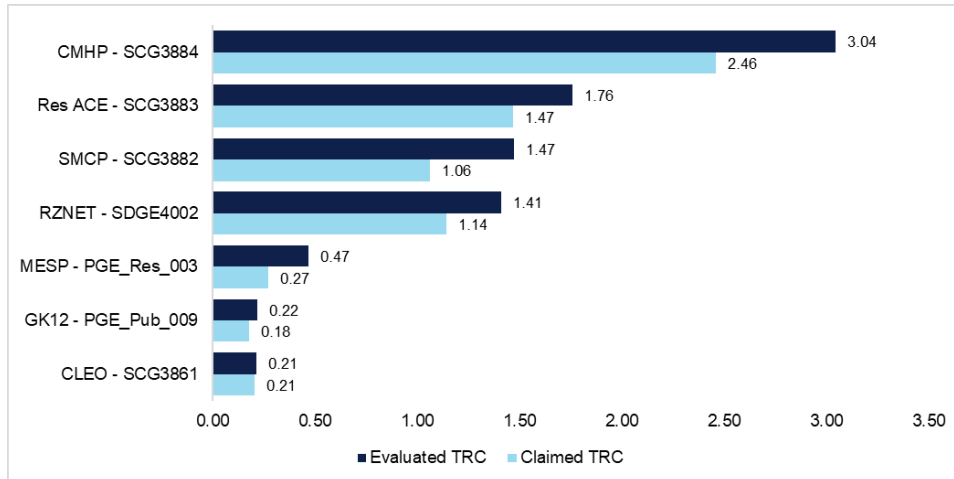


Table 4-23 looks at the system benefits for the local 3PPs. Local 3PPs provided higher total system benefits than such benefits based on claimed savings and costs. Overall, local 3PPs had total system benefit realization rates of at least 104% across all programs.

Table 4-23. Total system benefits of local 3PPs, PY2021

Program	Claimed	Evaluated	Realization Rate
Electric			
RZNET - SDGE4002	\$757,725	\$959,376	127%
GK12 - PGE_Pub_009	\$195,385	\$248,800	127%
MESP - PGE_Res_003	\$144,388	\$245,753	170%
CLEO - SCG3861	\$107,345	\$90,992	85%
SMCP - SCG3882	-\$2,504	-\$165	7%
Res ACE - SCG3883	\$3,050,666	\$3,634,135	119%
CMHP - SCG3884	\$2,159,224	\$2,684,883	124%
Gas			
RZNET - SDGE4002	\$5,491,975	\$6,767,906	123%
GK12 - PGE_Pub_009	-\$12,314	-\$24,858	202%
MESP - PGE_Res_003	\$100,008	\$175,013	175%
CLEO - SCG3861	\$240,832	\$270,102	112%
SMCP - SCG3882	\$299,371	\$411,950	138%
Res ACE - SCG3883	\$2,036,259	\$2,450,754	120%
CMHP - SCG3884	\$503,794	\$611,942	121%
Total			
RZNET - SDGE4002	\$6,249,700	\$7,727,282	124%
GK12 - PGE_Pub_009	\$183,071	\$223,942	122%
MESP - PGE_Res_003	\$244,395	\$420,766	172%
CLEO - SCG3861	\$348,177	\$361,095	104%
SMCP - SCG3882	\$296,867	\$411,786	139%
Res ACE - SCG3883	\$5,086,925	\$6,084,888	120%
CMHP - SCG3884	\$2,663,018	\$3,296,825	124%



4.4.3.3 Depth of retrofit

We examined the depth of retrofit to gain directional insight into the promise that local 3PPs may drive deeper energy savings than predecessor programs. We calculated savings as a percentage of annual consumption for this purpose. We also examined the distribution of measures programs offered to glean insights on the role these may play in delivering deeper savings.

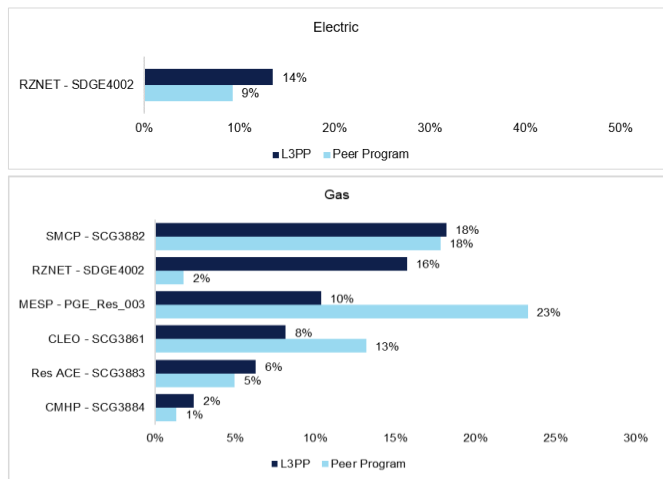
As part of this analysis, we compared the number of participating sites in local 3PPs and peer programs and the average annual energy consumption of those sites. Table 4-24 provides a summary of these values. Apart from the SCG Small and Medium Commercial EE Program (SCG3882), local 3PPs have more participating sites than their peers. The average annual energy consumption for local 3PP-participating sites is also generally higher.⁴⁹ The exception is PG&E’s Multifamily Energy Savings Program (PGE_RES_003), whose participating sites have lower average annual electricity consumption than those in local 3PP programs. PG&E’s peer multifamily program, which focused on whole-building retrofit with a comprehensive suite of measures targeting HVAC, building envelopes, water heaters, and lighting and appliances, appears to have treated larger multifamily sites than the PY2021 local 3PP multifamily program.

Table 4-24. Participating sites and annual average energy use of Local 3PPs and peer programs

Program ID	Local 3PP			Peer Programs		
	Sites	Electric use (kWh)	Gas Use (Therms)	Sites	Electric Use (kWh)	Gas use (Therms)
GK12 - PGE_Pub_009	12	58,463	NA	NA	NA	NA
MESP - PGE_Res_003	40	47,915	11,355	16	89,879	3,183
CLEO - SCG3861	2,308	NA	779	143	NA	313
SMCP - SCG3882	50	NA	7,311	3,065	NA	7,119
Res ACE - SCG3883	12,838	NA	461	2,650	NA	420
CMHP - SCG3884	3,731	NA	51,429	1,372	NA	8,150
RZNET - SDGE4002	1,390	56,605	4,298	1,104	37,949	2,510

Figure 4-9 provides the depth of retrofit metrics for local 3PP and peer programs.⁵⁰ Overall, average percent savings (savings relative to consumption) are higher or about the same for local 3PP programs compared to the selected peer programs.

Figure 4-9. Depth of retrofit of Local 3PP and peer programs



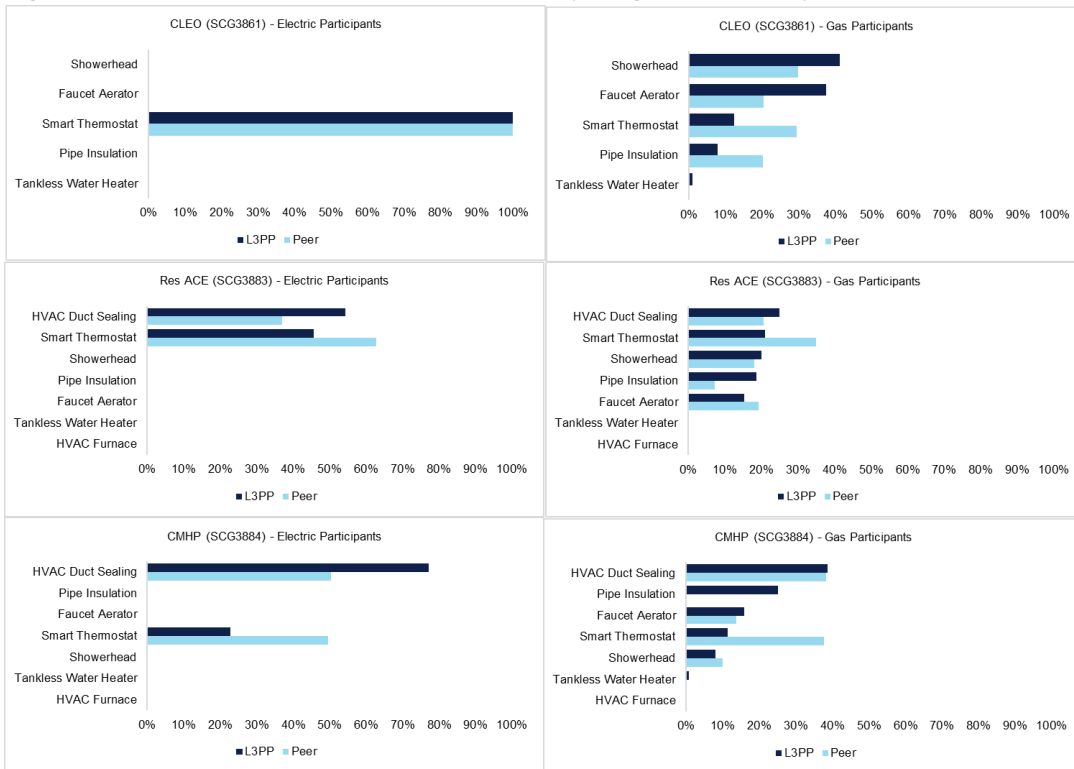
⁴⁹ Electricity consumption data is not available for SCG program participants.

⁵⁰ Because PG&E Multifamily Energy Savings Program (PGE_RES_003) had electric consumption data for only two out of the 40 participating sites, we did not include the electric depth of retrofit value for this program.



We examined the measures and frequencies with which programs installed them among participating sites to understand differences in the energy consumption reduction capabilities of the programs. Figure 4-10 provides the percent of electric and gas participants that received the technologies offered by three residential local 3PPs and their peer counterparts. It indicates that the residential local 3PPs and peer programs targeting single-family and manufactured homes offered similar measures. However, that the percentage of participating sites that installed each measure differed between local 3PP and peer program pairs. Part of the differences in the depth of retrofit between the local 3PP and the peer programs may be due to these differences. For example, SCG’s Residential Advanced Clean Energy Program (SCG3883) installed more duct sealing and pipe insulation than the peer program. The installation of more of these measures may be likely the reason that the percent of savings relative to consumption was higher for this program than its peer counterpart.

Figure 4-10. Proportion of measure installations by program and fuel type



Unlike the programs that targeted single-family and manufactured home participants, the large multifamily and commercial local 3PPs and peer programs offered different mixes of measures. Table 4-25 provides the electric and gas savings measures installed by these programs. The table indicates that the energy efficiency services offered by these local 3PPs and peer programs differed markedly. These differences may be part of the drivers of differences in the depth of retrofit of the two sets of programs.

Table 4-25. Multifamily and commercial Local 3PP and peer program measures across participating sites

Program ID	Measure	Local 3PP		Peer program	
		Electric saving	Gas saving	Electric saving	Gas saving
MESP - PGE_Res_003	Smart thermostat	✓	✓		
	Water heating controls		✓		
	Showerhead	✓			
	Whole building retrofit			✓	✓
	Showerhead			✓	✓

Program ID	Measure	Local 3PP		Peer program	
		Electric saving	Gas saving	Electric saving	Gas saving
SMCP - SCG3882	Tankless water heater				
	Boiler steam traps				
	Water heating controls	✓	✓		
	Modulating gas valve		✓		
	Faucet aerator		✓	✓	✓
	Pipe insulation		✓	✓	✓
	Tank insulation		✓	✓	✓
	Water heating pre-rinse spray valve			✓	✓

4.4.3.4 Program tracking success

We interviewed third-party implementers to assess how well they tracked information on various elements of the energy efficiency programs they ran. We also reviewed the key performance indicators (KPIs) programs used to for the same purpose.

We used the above sources of information to understand the types of program activity data collected by implementers, if programs tracked outcomes of audits and educational efforts, and if they promoted participation in any other programs. We also investigated the types of customer-related information programs collected, including contact information, HTR/DAC status, and information programs collected on customer experience. We highlight the findings and provide an assessment of the information tracked in the sections below.

Tracked information

All programs reported collecting information on program costs, milestones, measures, installation dates, and savings linked to each participant. A subset of the programs reported tracking outcomes from audits and educational efforts and cross-program promotions. When it comes to customer-related information, the programs reported collecting contact information on participants, property managers, and contractors where applicable. One implementer reported tracking participants' HTR/DAC status, but program KPIs indicate that most programs track this information. Similarly, the interviews and KPIs provided by program staff indicate that most programs collect data on customer experience. Table 4-26 provides a summary of information on local 3PPs tracked in PY2021.

Table 4-26. Information tracked by Local 3PPs in PY2021

Program	Data on program activity	Outcomes of audit efforts	Cross-program marketing	Customer experience	HTR/DAC status	Contact information
RZNET - SDGE4002	✓	✓	✓	✓	✓	✓
GK12 - PGE_Pub_009	✓		✓	✓		✓
MESP - PGE_Res_003	✓			✓		✓
CLEO - SCG3861	✓				✓	✓
SMCP - SCG3882	✓				✓	✓
Res ACE - SCG3883	✓			✓	✓	✓
CMHP - SCG3884	✓			✓	✓	✓

Assessment of tracked information

All local 3PPs reported tracking program-related information in their internal systems and databases using different protocols and data storage platforms. Although the programs gathered detailed program activity-related information, most programs did not track the conversion of audits to participation. For programs that have an audit component, tracking this measure would be one effective gauge of program success.



The local 3PPs also appeared to track limited cross-program promotions of other conservation programs they may have undertaken. This is partly due to a focus on building their own participation. Because local 3PPs have several customer touchpoints, they are uniquely positioned to build awareness about other available programs. For example, where there are opportunities, local 3PPs could promote demand response programs to enhance grid reliability and reduce the need for new system capacity. We discuss findings on the extent of local 3PPs' cross-program promotion efforts in the next section.

On balance, the local 3PPs reported tracking the customer-related information we investigated. Most of the programs tracked information on customer experience, which is vital for improving all aspects of program performance. Most of the programs also tracked the HTR status of participants. This metric is useful for understanding program performance related to equity and could help programs continue delivering equitable energy efficiency services.

4.4.3.5 Participant experience

Program delivery affects participant experience, including customer satisfaction and perceived non-energy benefits. It also affects the information customers receive to maximize benefits from current and future program participation. We used survey data to understand these aspects of the customer experience, which we discuss in this section. We also present factors that motivated program participation based on survey data to inform future program delivery improvements.

Customer satisfaction

DNV considered any survey respondent who answered a 4 or a 5 on a 5-point satisfaction scale to be satisfied. Across programs, 88% of the surveyed residential end users expressed satisfaction with the program they participated in. Participant satisfaction with individual program elements ranged from the high 70% to the high 80%. Results for HTR and non-HTR customers were similar. Where there was variation, non-HTR customers tended to be slightly less satisfied with a program element than HTR customers (Table 4-27).

Property managers, who participated in PGE_RES_003 or SDGE4002, were highly satisfied with the program as a whole and each individual program element. Close to 100% of respondents indicated satisfaction with almost all of the individual program elements. The lowest satisfaction rating among this group was 92% for the non-energy benefits of the PG&E multifamily (PGE_RES_003) program.

Non-residential end users had different experiences in the public and commercial programs. Commercial sector program (SCG3882) participants were very satisfied with all of the program elements captured by a very high overall level of satisfaction (97%). In contrast, the public sector program (PGE_PUB_009) participants were substantially less satisfied with every program element.

The sources of public sector dissatisfaction stemmed from administrative burdens and equipment problems. Participants responding to the survey indicated a cumbersome process, onerous paperwork, and incompatible measure installation. They suggested programs improve their service, provide more information during energy audits and train staff during program closeout, offer higher quality equipment such as heat pumps, and check for equipment compatibility before installation.

Table 4-27. Participant satisfaction with local 3PPs

Program element	Residential end users		Property Managers		Non-residential end users	
	HTR (n=231)	Non-HTR (n=578)	PGE_Res_003 (n=38)	SDGE4002 (n=56)	PGE_PUB_009 (n=5)	SCG3882 (n=33)
Overall program experience	88%	88%	100%	98%	59%	97%
Application or paperwork	84%	80%	100%	98%	59%	93%

Program element	Residential end users		Property Managers		Non-residential end users	
	HTR (n=231)	Non-HTR (n=578)	PGE_Res_003 (n=38)	SDGE4002 (n=56)	PGE_PUB_009 (n=5)	SCG3882 (n=33)
Energy savings and cost reduction	85%	79%	100%	98%	38%	91%
Experience with installation contractor	87%	86%	100%	98%	NA	NA
Information and education provided	85%	78%	100%	97%	38%	84%
Non-energy impacts	78%	76%	92%	96%	74%	96%
Program equipment offerings	81%	82%	100%	98%	59%	90%

Multiple responses permitted

Non-energy benefits

We examined non-energy benefits (NEBs) reported by residential and non-residential end users. It is evident that non-residential participants experienced higher perceived benefits than residential end users, with public sector respondents reporting the highest level of NEBs (Table 4-28). The relatively high level of perceived NEB in this area, connected most notably to reductions in operations and maintenance costs, corresponds with the only area of moderate satisfaction that this group of participants expressed. The commercial program (SCG3882) participants similarly expressed the highest level of perceived benefits from reductions in operations and maintenance costs. On the other hand, residential end users reported low levels of NEBs across all categories. This is also the area where they reported the lowest level of satisfaction.

Table 4-28. Self-reported non-energy benefits of local 3PP participants

Reported non-energy benefits	Residential end users		Non-residential end users	
	HTR (n=231)	Non-HTR (n=578)	PGE_PUB_009 (n=5)	SCG3882 (n=33)
Indoor air quality improvements	19%	18%	0%	7%
Increased comfort	29%	30%	59%	9%
Decreased operations and maintenance costs	14%	21%	100%	59%
Improved safety	28%	14%	59%	15%
Don't know			0%	26%

Multiple responses permitted

Information provided by the programs

The surveys asked respondents what information installation contractors provided them (Table 4-29). Most (61%) residential customers reported contractors provided tips on how to save energy with the equipment installed, and some (23%) also received information on other ways to save energy. Approximately 20% of residential customers also reported receiving referrals to other utility programs. Very few (~4%) residential customers said they received information on financing options, indicating limited discussions around deeper energy savings projects that require this.

Tips on how to save energy with the installed equipment were also the type of information contractors most frequently provided to property managers (~90%). Contractors provided other information less often, especially for the SDG&E's multifamily program.



Among the non-residential end-users, public sector program (PGE_PUB_009) participants were more likely to report that the installers gave them additional information during walk-throughs (62%), provided information on financing options (21%), cross-marketed other programs (38%), and provided tips on how to save energy unrelated to the installed systems (21%). Few commercial sector program (SCG3882) participants reported that their installers provided any of these types of information (12% or fewer, depending on the type). On the other hand, 59% of the commercial sector program (SCG3882) participants said their installers provided additional information about how to save energy related to the installed systems (compared to 21% of the public sector program participants).

These differences in experience likely reflect the different program delivery methods. The public sector program (PGE_PUB_009) involved more interaction among installers and participants. The commercial sector program (SCG3882) is a small business program with less opportunity for installer-participant interactions. While the lighter interactions in the commercial sector program might be necessary to maintain cost effectiveness, it could result in missed opportunities to encourage deeper savings among the participants that the program is serving.

Table 4-29. Information provided to Local 3PP participants

Information provided	Residential end users		Property Managers		Non-residential end users	
	HTR (n=231)	Non-HTR (n=578)	PGE_Res_003 (n=38)	SDGE4002 (n=56)	PGE_PUB_009 (n=5)	SCG3882 (n=33)
Tips on how to save energy with the installed equipment	61%	61%	95%	82%	21%	59%
Tips on how to save energy unrelated to the installed equipment	23%	23%	53%	8%	21%	12%
Recommended participation in another utility energy conservation program	20%	19%	55%	18%	38%	8%
Provided additional energy savings opportunities during walk-through consultation	15%	18%	0%	2%	62%	12%
Provided information on financing options	4%	3%			21%	3%
Installers did not provide any information	8%	11%	0%	6%	21%	15%

Multiple responses permitted

Cross-program participation

Cross-program participation was one of the goals of several local 3PPs. We explored the cross-program promotion effects of local 3PPs by examining participant awareness of demand response (DR) programs and the influence of the local 3PPs on participation in additional energy efficiency programs.

Table 4-30 indicates that a sufficiently large number of residential participants (over 40%) lacked knowledge about DR programs. The table also shows that a relatively limited number of the local 3PP residential customers participated in other energy conservation programs following participation in local 3PPs. Both findings indicate that local 3PPs have opportunities to engage in additional cross-program promotions by providing more education among this participant segment.



Table 4-30. Cross-program participation among residential local 3PP participants

Cross-program participation	Residential HTR (n=231)	Residential non-HTR (n=578)
Never heard of DR programs	45%	41%
Influenced participation in subsequent EE programs	4%	8%

Table 4-31 summarizes DR program awareness and the influence of the local 3PPs on participation in subsequent energy efficiency programs among non-residential participants. The table indicates that relatively high proportions of the public sector and an even higher proportion of the commercial sector program participants were unaware of demand response programs. When asked about the influence of the local 3PPs on enrollment in additional programs, 21% of PG&E’s public sector and 9% of SCG’s commercial sector program participants noted that they participated in another energy conservation program because of the local 3PPs. While the non-residential local 3PPs were more influential in encouraging participation in other energy efficiency programs than the residential local 3PPs, they could provide more education about DR programs to raise awareness and participation in DR programs among non-residential customers.

Table 4-31. Cross-program participation among non-residential local 3PP participants

Cross-program participation	GK12 - PGE_Pub_009 (n = 5)	SMCP - SCG3882 (n = 33)
Never heard of DR programs	41%	70%
Influenced participation in subsequent EE programs	21%	9%

Participation drivers

Among residential participants, financial concerns were the key program drivers (Table 4-32). Approximately 85% of participants reported participating because it was a low or no cost program. Approximately half of residential participants also reported participating to lower energy bills. Reducing carbon emissions or replacing older equipment were less commonly cited reasons for participating. There were no notable differences in program drivers between HTR and non-HTR customers.

Among the property managers, financial concerns were also the most important driver. Over 97% reported it as a driver. Corporate policies were cited by only 8% of the SDG&E program (SDGE4002) participants and none of the PG&E (PGE_RES_003) participants.

Among the non-residential participants, reducing energy bills and leveraging the utility incentives were cited as a driver for the majority of participants in each program. Participants in the public sector (PGE_PUB_009) program also commonly cited several of the other drivers, including non-energy benefits and reducing carbon emissions. Fewer than 25% of participants in the commercial sector program (SCG3882) cited another participation driver beyond the incentives or reducing energy bills. The differences among these two types of customers suggests that effective marketing might stress different outcomes for each type of customer.

Table 4-32. Factors influencing local 3PP participation, PY2021

Factors influencing participation		
	Residential HTR (n=231)	Residential Non-HTR (n=578)
Program was free / no cost to me	85%	84%
Reduced energy bills	47%	50%
Reducing carbon emissions	18%	17%
Equipment failure or end of useful life	12%	8%

Factors influencing participation		
	MESP - PGE_Res_003 (n=38)	RZNET - SDGE4002 (n=56)
Rebates/incentives	97 %	100%
Corporate policy or guidelines	0%	8%
	PGE_PUB_009 (n=5)	SCG3882 (n=33)
Non-energy benefits	100%	25%
Reducing facility energy bills	100%	64%
Reducing carbon emissions / good for the environment	82%	24%
Availability of financing or co-payment	79%	2%
Utility rebates / incentives	79%	62%
Equipment needed maintenance	59%	18%
Previous program participation	38%	3%
Renovation / addition / remodel	21%	5%
Contractor recommendation	21%	23%
Equipment failure or end of useful life	18%	5%

Multiple responses permitted

4.4.4 Contractor experience

We completed surveys with 16 contractors. Eight worked with the SCG Small and Medium Commercial EE Program (SCG3882), four worked with the SCG Community Language Efficiency Outreach Program (SCG3861), one worked with the PG&E Multifamily Energy Savings Program (PGE_RES_003), and three worked with the PG&E Government and K-12 Comprehensive Program (PGE_PUB_009). Because of the relatively small number of installation contractors involved, the report presents the results across all 16 contractors.⁵¹

Contractor characteristics

Most of the participating contractors are small. A little less than half (44%) of the contractors employ 5 or fewer full-time staff. A similar proportion (41%) employ 6 to 20 full-time staff. Only 15% employ more than 20 full-time staff.

Source of information about program

Most (73%) of the contractors reported first hearing about the program from the program implementer. The next most common source of information (23%) was utility staff or marketing materials.

Equipment availability

Supply-chain shortages are common in post-pandemic America. The survey attempted to assess to what degree supply-chain shortages could be affecting the contractors serving the local 3PPs. Two-thirds (66%) of contractors reported that the supply of energy efficient equipment has increased. Much fewer (14%) reported decreases in the availability of energy efficient equipment.

Equipment resizing

The survey asked contractors how often they install smaller or lower capacity equipment because a more efficient unit can produce the same output for lesser input. The frequency of downsizing equipment was fairly evenly distributed across the options provided in the survey. Approximately 1/5th of contractors reported always installing lower capacity equipment, and an equal proportion reported never doing so (Table 4-33).

⁵¹ We did not survey installation contractors for three of the local 3PPs since they were implemented by Synergy, which used in-house staff to install measures.



Table 4-33. Frequency of installing smaller equipment

Frequency of replacement with smaller equipment	Contractors (n=16)
Always	21%
Often	23%
Sometimes	14%
Rarely	9%
Never	21%
Don't know	12%

Program satisfaction

Table 4-34 presents the percentage of contractors that were satisfied (4 or 5 on a 5-point scale) with several different program characteristics. Contractors were most satisfied with program staff and least satisfied with the rebates. Issues that cause this dissatisfaction included the rebates taking too long to receive and being too small. Despite the low satisfaction with the rebates, 54% of contractors reported that the rebates are adequate to motivate equipment sales, and 61% reported that the programs caused them to sell and install more energy efficient equipment.

Table 4-34. Contractor satisfaction

Program characteristic	Percent of contractors satisfied (n=16)
Staff	96%
Paperwork	72%
Marketing	65%
Incentives	62%
Rebate	38%
Program overall	45%

4.5 Assessment of key performance indicators (KPIs)

For the assessment of the KPIs provided by the PY2021 local 3PPs, we start by defining the purpose of KPIs in the context of the design and administration of energy efficiency programs by third-party implementers. In their role as portfolio managers, IOUs can use KPIs to gauge if implementers are meeting contractual obligations. Both the IOUs and implementers can also use the KPIs to track project progress relative to the terms defined in each program's respective contracts. Under this application, KPIs serve a key role for internal stakeholders.

KPIs are also important to external stakeholders for their usefulness in program performance evaluations. Given the important roles that KPIs can play in regulatory oversight, the CPUC has established requirements for portfolio- and sector-level metrics that track the performance of energy efficiency programs in D.15-10-028.⁵² These are detailed in Appendix A of D.18-05-041 and provide a common set of sector-level metrics and indicators that the PAs must report.⁵³ These common metrics allow consistent tracking of performance across different PAs and over time.

The CPUC has not set out requirements for program-level metrics, but it expects the PAs to provide detailed metrics for their programs in program implementation plans.⁵⁴ While the PAs can set different detailed program-level metrics, some level of uniformity in these will allow the comparison of performance across programs and over time. Such consistency

⁵² CPUC, "Decision RE Energy Efficiency Goals for 2016 and Beyond and Energy Efficiency Rolling Portfolio Mechanics," cpuc.ca.gov, October 28, 2015,

<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M155/K511/155511942.pdf>

⁵³ CPUC, "Decision Addressing Energy Efficiency Business Plans," cpuc.ca.gov, May 31, 2018, <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M215/K706/215706139.PDF>

⁵⁴ On page 53 of D.15-10-028, the CPUC indicated that "PAs will still need to set more granular metrics than just sector-level metrics, but they will do so in implementation plans, not business plans."



would mirror the spirit of the common set of sector-level metrics. We assessed the KPIs provided by the PY2021 local 3PPs through the prism of the need for such consistency.

In general, the KPI tables for the PY2021 local 3PPs provide information on the metrics or indicators tracked,⁵⁵ the definitions of the indicators, the goals for each performance category the indicators track, and the outcomes of performance relative to goals. Each table also includes weights that combine the outcomes of the different tracked metrics into an overall KPI value. As a starting point, there are differences in the names of the variables provided in the KPIs tables local 3PPs use to track performance. Table 4-35 provides a list of KPI variables and names given to each variable by the different programs. The table also provides DNV’s explanation of the variables to facilitate the comparison of the terms across the different tables.

Table 4-35. Variables reported in PY2021 Local 3PP KPI tables

KPI variable	SCG	PG&E	SDG&E	Explanation
Target	Net Goal	Goals/Forecast	NA	Performance value a program aims to achieve
Outcome	Net PTD	Actuals	NA	Realized or achieved performance value
Scoring value	Scoring Value	Variance	Score	Outcome relative to target
Benchmark	Scoring	Scoring explanation	NA	Standard against which outcome relative to target is evaluated
Score	Score	Score	KPI	Measure of performance ranging from 0 to 4

In addition, the PY2021 local 3PPs did not track all the same categories of performance. Even when the programs tracked the same performance categories, they used different KPI definitions for this purpose. Table 4-36 summarizes the KPI indicators and their definitions provided by the programs.

Table 4-36. Definitions of the PY2021 KPI variables and the number of programs with each performance category

Performance category	Definitions of KPI indicators used by Local 3PPs	Number of programs with the KPI
Energy savings	<ul style="list-style-type: none"> • Achieved first-year savings relative to forecast/contract • Achieved lifecycle savings relative to forecast/contract 	7
Cost Effectiveness	<ul style="list-style-type: none"> • Actual TRC relative to approved • Actual PAC relative to approved 	3
Diverse Business Enterprise Spend	<ul style="list-style-type: none"> • % Spending relative to planned spending on DBE • % DBE spending planned relative to total spending 	4
Participation of DAC and HTR customers	<ul style="list-style-type: none"> • % Achieved energy savings in HTR and/or DAC markets • % HTR and DAC participants compared to goal • % HTR participants compared to goal • % DAC participants compared to goal 	5

⁵⁵ CPUC Decision 18-05-041, which defines the requirement for sector level KPIs, makes a distinction between metrics and indicators but we use these terms interchangeably here.

Performance category	Definitions of KPI indicators used by Local 3PPs	Number of programs with the KPI
Program reach	<ul style="list-style-type: none"> • % Sites treated compared to sites that received marketing • % Projects or installations relative to goal or forecast • % Sites with audits relative to all sites treated 	5
Depth of intervention / retrofit	<ul style="list-style-type: none"> • % Sites with renewables or storage relative to total treated • % Comprehensive EE projects out of total projects delivered • % Sites enrolled in demand response programs • Average net lifecycle savings per home 	4
Budget spending	<ul style="list-style-type: none"> • Monthly spending compared to budget • % Spending relative to budget compared to % achieved energy savings relative to goal 	2
Service delivery quality	<ul style="list-style-type: none"> • Service delivery quality (timeliness, communication, etc.) • Reporting accuracy 	7
Customer satisfaction	<ul style="list-style-type: none"> • Average number of days from lead assignment to customer contact • PA or implementer surveys • Annual complaints relative to total customers treated 	3
Safety and workforce standards	<ul style="list-style-type: none"> • Compliance with IOU Contractor Safety Program 	2

As the table makes evident, the indicators required to evaluate different program elements were not available for all programs or were not consistently designed. For example, only 3 programs reported using customer satisfaction metrics to score program performance.

Overall, the differences we observed can be summarized as follows:

- The definitions of KPIs that track similar performance categories are not always the same. For example, KPI definitions to track the depth of intervention or retrofit varied widely among the programs. One program defined this as the average of net lifecycle savings per home, while another defined it as the percent of projects with comprehensive energy efficiency relative to total projects delivered. Differences in the definition of program performance indicators make it challenging to compare performance across programs.
- The definition of KPIs provided is not always transparent. Lack of clarity in how KPI values are defined poses additional challenges in interpreting and comparing program performance. Missing information, for example the targets and benchmarks used to generate KPI scores, create an additional gap in the information needed to make appropriate evaluations using KPI scores.
- The targets that programs used to determine the scoring values (the values of outcomes relative to target) are different. For example, KPI values that track energy savings have different savings goals that are used to score performance. While such differences likely reflect program design differences, including differences in program objectives, it is important to consider their impact when making comparisons across programs.
- The benchmarks used to evaluate outcomes relative to goals (scoring values) are also not uniform. The programs also appear to use different benchmarks to evaluate scoring values. For example, some programs use benchmarks that provide a score of 2 for outcomes that are 100% of goal while others assign a score of 4 for the same since a 100%

reflects that the tracked performance met its goals completely. Such scoring differences may reflect different program operational circumstances but pose challenges for cross-program comparisons of performance.

- The programs combined the KPI scores of each category of performance using different weights, making a like-for-like comparison of overall program performance difficult.

4.6 Program innovations

One impetus for the CPUC's decision to earmark 60% of IOUs' energy efficiency budgets for third-party program design and implementation is the expectation that third parties will deliver more innovative programs. Innovation can involve various aspects of a program, including product offering, design, marketing, and delivery. The CPUC's Implementation Plan Template Guidance (version 2.1) defines innovation for programs designed and delivered by third parties. Some examples of innovations featured in the guidance include:

- Offering an energy efficiency technology that is emerging and new to the market
- Creating new online systems that support energy management
- Developing strategies that can increase customer participation through a creative recruiting scheme
- Developing new incentives to encourage program participation

Based on the CPUC guidance, local 3PPs in both residential and non-residential sectors deployed innovative strategies to engage prospective customers, improve program delivery, and track program progress.

To understand innovations of the PY2021 local 3PPs, we examined the program implementation plans (PIP) of each local 3PP and supplemented these with information gathered from program implementer interviews. The PIPs provide innovative strategies that the programs planned to introduce while the interviews with implementers shed light on the relative success of these strategies. The PIPs and information from the interviews indicate that the programs developed different innovative approaches depending on their market segment and prospective customers. The sections below provide a discussion and assessment of these strategies.

4.6.1 Innovative strategies

Outreach and marketing efforts are integral to program success. Local 3PPs strived to engage customers with innovative outreach strategies presented in their program implementation plans. Implementers also provided additional nuances on these approaches during interviews.

Outreach innovations: Innovations in outreach strategies covered four broad categories including:

- Analytics-based approaches, such as service territory and customer information used to target potential participants, and advanced analytics methods used to identify customers likely to participate in programs
- Targeted messaging, such as to communities whose primary language is not English
- Partnerships with local communities, government entities, and trade allies to expand the outreach of the programs
- Walkthrough audits and consultations to garner customer engagement and achieve deeper savings. These audits became a pathway the programs used to introduce prospective customers to their offerings and to engage them in an energy efficiency journey to achieve deeper savings.

Examples of outreach innovations include PG&E's public sector program (PGE_PUB_009) use of advanced analytics to identify prospective participants, SCG's commercial sector program (SCG3882) use of data analysis, including customer segmentation, to support outreach efforts, and PG&E's multifamily program (PGE_RES_003) customer targeting based on utility service territory and customer information.



Local 3PPs also reported partnerships with local actors and other stakeholders as one of the most commonly used outreach innovations. The PG&E multifamily program (PGE_RES_003) engaged with stakeholder organizations, such as the California apartment association, as part of its outreach efforts. The PG&E public sector program (PGE_PUB_009) relied on local government champions to promote its program. The SCG commercial sector program (SCG3882) partnered with trade allies to enroll new customers. The SCG community language program (SCG3861) leveraged relationships with local community organizations to target the desired customer segment. The SCG manufactured home program (SCG3884) also partnered with local governments and manufactured home communities to enhance its customer outreach activities.

As a part of its marketing and outreach efforts, the SDG&E manufactured home and multifamily program (SDGE4002) implemented ASHRAE Level 1 audits instead of direct-install only offerings to prospective customers. SCG's single family program (SCG3883) also deployed complimentary audits with sales consultations instead of offering expensive retrofit solutions to gain broader participation.

Program delivery innovations: The local 3PPs also proposed innovations to improve the success of program delivery and drive deeper savings through:

- Customer education
- Tailored service offerings
- Encouraging investment in advanced clean energy solutions
- Cross-program participation and technologies that target energy efficiency, demand response, and in some cases, water savings
- Financing approaches, such as flexible incentives, aimed at reducing upfront participation costs
- An online platform to track program activities and performance

The SDG&E manufactured home and multifamily program (SDGE4002) and the PG&E public sector program (PGE_PUB_009) reported delivery innovations that focused on educating customers, SCG's commercial sector program (SCG3882) concentrated on energy efficiency solutions tailored to participant needs, and SCG's single family program (SCG3883) encouraged investment in advanced clean energy technologies (tier 2 measures) to achieve higher savings.

The SDG&E manufactured home and multifamily program (SDGE4002) is one of the programs that focused on encouraging cross-program participation as part of its delivery innovations. The program leveraged its complimentary audit as an opportunity to introduce demand response programs to customers. The PG&E public sector program (PGE_Pub_009) also introduced customers to energy efficiency and demand response technologies as part of its program delivery innovation.

Other programs used financing-related delivery innovations. PG&E's multifamily program (PGE_RES_003) offered flexible incentives to participants based on their needs. The PG&E public sector program (PGE_Pub_009) enhanced incentives to reduce upfront costs. The SCG commercial sector program (SCG3882) also provided incentives to reduce upfront participation costs since small businesses are often under capital constraints and are consequently less likely to participate in programs.

Some programs also reported deploying online tools to track program activities as their delivery innovation. For example, to track their progress, the PG&E multifamily program (PGE_RES_003) and public sector program (PGE_Pub_009) reported adopting online platforms that track all aspects of program management, including program activity, data analytics, and performance.

4.6.2 Assessment of innovative strategies

To assess innovative strategies, we reviewed if the local 3PPs reported metrics that track the specified innovations and how successful these have been, using KPIs scores or qualitative assessments from implementer interviews.

Outreach innovations: Table 4-37 summarizes the innovative outreach strategies used by the programs and an evaluation of these innovations. Outreach innovations that engage customers through audits and targeted messages and leverage partnerships with trade allies, community organizations, and other local actors appear to garner success. Other outreach innovations that may not have resulted in immediate success, including data analytics, have a place as implementers indicated a hybrid approach to be valuable.

Our evaluation found several gaps in metrics that track program performance related to outreach innovation. For example, there are no KPIs to assess the outcomes from the analytics-driven targeting methods used by the programs. Designing KPIs to capture such performance is foundational to getting an accurate picture of the success of program outreach efforts.

Table 4-37. Local 3PP program delivery innovations, PY2021

Program	Program Outreach Innovation	Innovation metric	Outcome / Assessment
RZNET - SDGE4002	ASHRAE Level 1 audits to engage participants	Number of ASHRAE 1 audits	Audit goals met
GK12 - PGE_Pub_009	Enriched customer data profiles for effective targeting Partnerships with local government to expand outreach	None reported	Advanced analytics provided limited success
MESP - PGE_Res_003	Service territory and customer information-based targeting Partner with stakeholders to support outreach efforts	None reported	Direct contact with stakeholders and customer enrollment sluggish due COVID
CLEO - SCG3861	Use in-language materials to deliver tailored messages Partner with local community organizations to support outreach	Number of outreach events relative to goal	Number of attendances exceeded goal
SMCP - SCG3882	Use data and analysis tools to support outreach Partner with trade allies to improve enrollment	None reported	Referral from trade allies reported as more successful compared to analysis and customer targeting
Res ACE - SCG3883	Walkthrough audits and sales consultation	None reported	Conversion from walkthrough audit reported as a metric in PIP but no KPI provided
CMHP - SCG3884	Partner with manufactured home communities to increase participation	None reported	No information to assess outcome

Program delivery innovations: Table 4-38 provides a snapshot of the delivery innovations to achieve deeper savings reported by each program and the status of the outcomes using these approaches. There is no formal definition of deeper savings, but programs appear to define deeper savings implicitly as those involving the installation of more efficient measures with the potential to save a high proportion of household energy consumption. For example, SCG programs offer tier 1 and tier 2 measures with tier 2 measures falling in the category of technologies that can deliver higher energy consumption reduction. The few programs with KPIs that track conversion to deeper savings indicate the partial success of programs in achieving deeper savings, with one program reporting having met its goals.

The available evidence indicates mixed success in delivering deep savings, but all the projects have placed a great emphasis on achieving deeper savings and are paying attention to innovations that make this possible. The implementation plans as well as interviews with implementers convey the objective of a transformational rather than a transactional



engagement with customers. Since programs are still in their nascent stages, more time is needed to determine the success of program delivery innovations in delivering deeper savings.

Table 4-38. Local 3PP program delivery innovations, PY2021

Program	Program Delivery Innovation	Innovation metric	Outcome/Assessment
RZNET - SDGE4002	Educate customers to achieve deeper energy savings Promote technologies that unite demand response and energy efficiency	Demand response enrollment Conversion to deeper savings (renewable and storage sales) projects	DR goals partially met Conversion to deeper energy savings goals met
GK12 - PGE_Pub_009	Educate customers to achieve deeper energy savings Promote technologies that deliver energy efficiency and demand reduction	None reported	No information to assess outcome
MESP - PGE_Res_003	Provide flexible incentives to reduce upfront costs	None reported	No information to assess outcome
CLEO - SCG3861	Provide information about incentives to improve participants' access to financing	None reported	No information to assess outcome
SMCP - SCG3882	Provide tailored ("concierge") energy efficiency solutions to participants Provide incentives to reduce upfront participation costs	None reported	No information to assess outcome
Res ACE - SCG3883	Encourage investment in advanced clean energy technologies (tier 2 measures)	Conversion to deeper savings - Target 15% of total projects	Goal not met - program reported goals as unrealistic

4.7 Program equity evaluation

The local 3PPs were designed and began implementation before the publication of the CPUC ESJ goals. However, DNV's interpretation of those goals is that they are intended to apply to all activities going forward, including resource acquisition programs that may not have a specific focus on equity. This section reviews how the local 3PPs are doing in relation to those goals so far and identifies some areas where they will need to evolve in the future to meet the CPUC ESJ goals.

The local 3PP activities are consistent with the following CPUC ESJ goals:

- **Goal 2: Increase investment in clean energy resources [programs] to benefit ESJ communities**
 - The local 3PPs generally have a greater proportion of HTR and DAC customers than their peer programs.
 - Most of the local 3PPs are reaching a greater volume of HTR and DAC customers.
 - Local 3PPs attempted to increase energy savings through customer education, tailored service offerings, encouraging cross-program participation, and offering flexible incentives.
- **Goal 3: Strive to improve access to communications for ESJ communities**
 - The local 3PPs changed outreach approaches in response to signs that original outreach was ineffective.



- Canvassing and direct outreach appear to be preferred and more effective modes of communication with HTR and DAC customers.
- Partnerships with local actors and other stakeholders were one of the most commonly used outreach innovations.

The local 3PP activities are not consistent with the following CPUC ESJ goals:

- **Goal 5: Enhance outreach and public participation opportunities for ESJ communities to meaningfully participate in the CPUC’s decision-making process and benefit from CPUC programs**
 - Outreach activities appear to be one-directional, where the local 3PPs give information to the communities (goal 3) but do not provide opportunities for community input into program design (goal 5).
 - While these programs were designed and began implementation before the publication of the CPUC ESJ plan, our interpretation of that plan is that it strives to build equitable delivery into all programs going forward. Thus, as these programs evolve over the next several years, greater interaction with communities will help realize those CPUC goals.

The results for Goal 1 were mixed:



- **Goal 1: Consistently integrate equity and access considerations throughout CPUC regulatory [and programmatic] activities**
 - The local 3PPs were able to reach a greater proportion and greater volume of HTR and DAC customers than the peer programs.
 - Most program KPIs include some equity-related metrics.
 - However, KPIs are inconsistent across local 3PPs.

The evaluation did not gather information relative to the remaining ESJ goals:

- **Goal 4: Increase climate resiliency in ESJ communities**
- **Goal 6.1: Protect ESJ Consumers [through equitable programs]**
- **Goal 8: Improve training and staff development related to ESJ issues within the CPUC’s jurisdiction [specifically focused on equitable evaluation]**
- **Goal 9: Monitor the CPUC’s ESJ efforts to evaluate how they are achieving their objectives**

5 SUMMARY AND CONCLUSIONS

Table 5-1. Key findings and recommendations

 Key findings	 Implications and recommendations
<p>1. Evaluated NTG values are higher than DEER default in most cases.</p>	<p>Program attribution (NTGRs) is higher than expected. Programs should continue targeting similar population segments. We recommend that the DEER team review the default NTG values for measures offered through downstream delivery channels.</p>
<p>2. Direct outreach and partnering with other organizations/entities were effective outreach innovations/strategies.</p>	<p>Programs that use intelligent targeting and other data-based approaches should consider a hybrid approach that leverages direct outreach strategies.</p>
<p>3. Not all programs tracked outreach innovations, making it difficult to assess their true impact.</p>	<p>Programs should identify a common set of KPIs based on similar definitions and benchmarks to monitor and facilitate comparison of the performance of innovations across programs and over time and use the results to refine program design and improve outcomes.</p>
<p>4. Outreach activities appear to be one-directional, where the local 3PPs do not provide opportunities for community input into program design.</p>	<p>Build more community input into all phases of program delivery.</p>
<p>5. Program delivery innovations will take time to achieve deeper savings.</p>	<p>Local 3PPs are still in their nascent stages, and more time is needed to determine the success of program delivery innovations in delivering deeper savings.</p>
<p>6. The program's activities were consistent with some of the CPUC ESJ goals but not others, and more information is needed to assess consistency with several others.</p>	<p>PAs should include equity- and access-related metrics for all programs.</p> <p>CPUC should provide additional guidance relating to what practices and outcomes are consistent with ESJ Goals 4, 6, 8, and 9.</p>
<p>7. Local 3PPs are more effective than peer programs at reaching HTR and DAC customers.</p>	<p>Local 3PPs should work on consistently integrating equity and access into program design while continuing the current efforts. Strive to directly collaborate with community partners to improve outreach.</p>



6 APPENDICES

6.1 Appendix A: Gross and net lifecycle savings

Gross and net lifecycle savings are in the attached pdf.

6.2 Appendix B: Per unit (quantity) gross and net energy savings

Per unit (quantity) gross and net energy savings are in the attached pdf.



6.3 Appendix C: IESR–Recommendations resulting from the evaluation research

Study ID	Study Type	Study Title	CPUC Study Manager
Group A: CALMAC ID CPU0352.01	Impact Evaluation	Local Third-Party Programs - Program Year 2021	Justin Galle

Rec #	Program or Database ¹	Summary of Findings	Additional Supporting Information	Best Practice / Recommendations	Recipient	Affected Workpaper or DEER
1	Multiple local third-party programs	Evaluated NTG values are higher than DEER default in most cases.	Section 4.1.3	Program attribution (NTGRs) is higher than expected. Programs should continue targeting similar population segments. We recommend that the DEER team review the default NTG values for measures offered through downstream delivery channels.	CPUC, PG&E, SDG&E, SCG	Statewide workpaper
2	Multiple local third-party programs	Direct outreach and partnering with other organizations/entities were effective outreach innovations/strategies.	Section 4.2.2	Programs that use intelligent targeting and other data-based approaches should consider a hybrid approach that leverages direct outreach strategies.	PG&E, SDG&E, SCG	N/A (Program design consideration)
3	Multiple local third-party programs	Not all programs tracked outreach innovations making it difficult to assess their true impact.	Section 4.5	Programs should identify a common set of KPIs based on similar definitions and benchmarks to monitor and facilitate comparison of the performance of innovations across programs over time and use the results to refine program design and improve outcomes.	CPUC, PG&E, SDG&E, SCG	N/A (Program design consideration)



4	Multiple local third-party programs	Outreach activities appear to be one-directional, where the local 3PPs do not provide opportunities for community input into program design.	Section 4.2.2 and Section 4.7	Build more community input into all phases of program delivery.	CPUC, PG&E, SDG&E, SCG	N/A (Program design consideration)
5	Multiple local third-party programs	Program delivery innovations will take time to achieve deeper savings.	Section 4.4.3 and Section 4.6.2	Local 3PPs are still in their nascent stages and more time is needed to determine the success of program delivery innovations in delivering deeper savings.	CPUC, PG&E, SDG&E, SCG	N/A (Program design consideration)
6	Multiple local third-party programs	The program's activities were consistent with some of the CPUC ESJ goals but not others, and more information is needed to assess consistency with several others.	Section 4.7	PAs should include equity- and access-related metrics for all programs. Provide additional guidance relating to what practices and outcomes are consistent with ESJ Goals 4.1, 6.1, 8, and 9.	CPUC, PG&E, SDG&E, SCG	N/A (Program design consideration)
7	Multiple local third-party programs	Local 3PPs are more effective than peer programs at reaching HTR and DAC customers.	Section 4.3.2	Local 3PPs should work on consistently integrating equity and access in program design while continuing the current efforts. Strive to directly collaborate with community partners to improve outreach.	CPUC, PG&E, SDG&E, SCG	N/A (Program design consideration)

¹ Third-party programs evaluated in PY2021, including SDGE4002, PGE_RES_003, PGE_PUB_009, SCG3861, SCG3884, SCG3883, SCG3882.

6.4 Appendix D: Gross savings by program

This sections provides details on DNV’s reviews of measure package parameters used to claim savings in the tracking data for each program.

6.4.1.1 SDG&E Residential Zero Net Energy Transformation Program (SDGE4002)

There were two types of discrepancies between tracking data and eTRM values for this program. For the faucet aerator measure, the program neglected to claim the Multifamily-specific NTG_ID that is used in the eTRM measure package. This led to slightly lower net savings with an NTGR of 0.59 instead of the 0.65 used by the eTRM. The rest of the discrepancies were due to claimed building types that did not match claimed savings. Most often this discrepancy occurred when the program claimed a Manufactured Home Building Type but used Multifamily building type savings, though other incorrect combinations were found as well. Ultimately this set of claims had a minimal impact on the overall GRR and NRR of the program, as 100% GRR and NRR were achieved for all three impact types. Table 6-1. provides a summary of the findings.

Table 6-1. Summary of SDG&E RZNET (SDGE4002) tracking data correspondence with DEER values

Measure Name	Number of Claims	Claims with discrepancy	Claimed gross savings	GRR	Claimed net savings	NRR	Claimed NTGR	Evaluated NTGR
kW								
Duct Seal v3	302	0%	105	100%	80	100%	0.76	0.76
Refrigerant charge adjustment	833	1%	702	100%	461	100%	0.66	0.66
Condenser coil cleaning	1,656	0%	63	100%	41	100%	0.66	0.66
Airflow adjustment	1,528	1%	29	100%	19	100%	0.66	0.66
Fan controller for air conditioner	426	4%	53	104%	35	101%	0.65	0.64
Brushless fan motor replacement	294	2%	82	102%	56	101%	0.68	0.67
Duct Seal v2	176	0%	56	100%	38	100%	0.68	0.68
LED, tube	119	0%	12	100%	7	100%	0.58	0.58
Total	5,334	1%	1,102	100%	736	100%	0.67	0.67
kWh								
Duct Seal v3	302	0%	178,903	100%	136,334	100%	0.76	0.76
Refrigerant charge adjustment	833	1%	903,980	100%	594,024	100%	0.66	0.66
Condenser coil cleaning	1,656	0%	59,623	100%	39,195	100%	0.66	0.66
Airflow adjustment	1,528	1%	27,331	100%	18,019	100%	0.66	0.66
Fan controller for air conditioner	426	4%	154,908	103%	101,159	101%	0.65	0.64
Brushless fan motor replacement	294	2%	84,932	100%	57,647	100%	0.68	0.68
Duct seal v2	176	0%	97,684	100%	66,420	100%	0.68	0.68
Smart thermostat	365	4%	87,174	104%	78,457	104%	0.90	0.90
LED, tube	119	0%	757,083	100%	437,359	100%	0.58	0.58
Total	5,699	1%	2,351,617	100%	1,528,613	100%	0.65	0.65
Therms								
Duct seal v3	302	0%	3505	100%	2672	100%	0.76	0.76
Refrigerant charge adjustment	833	1%	-30	93%	-18	97%	0.62	0.64
Condenser coil cleaning	1,656	0%	-2	90%	-1	96%	0.60	0.64
Airflow adjustment	1,528	1%	-1	92%	-0.49	97%	0.61	0.64
Hot water tank insulation v2	403	0%	1011989	100%	619339	100%	0.61	0.61
Hot water pipe insulation v2	324	0%	485424	100%	233395	100%	0.48	0.48
Brushless fan motor replacement	294	2%	-646	101%	-439	100%	0.68	0.67
Faucet aerator	120	34%	14654	100%	9483	107%	0.65	0.69
Water heater pipe wrap	1,298	0%	106443	100%	78310	100%	0.74	0.74
Low-flow showerhead v2	213	0%	10192	100%	7356	100%	0.72	0.72
Duct seal v2	176	0%	1867	100%	1271	100%	0.68	0.68

Measure Name	Number of Claims	Claims with discrepancy	Claimed gross savings	GRR	Claimed net savings	NRR	Claimed NTGR	Evaluated NTGR
Hot water pipe insulation v1	8	0%	5410	100%	3683	100%	0.68	0.68
Smart thermostat	365	4%	2187	102%	1968	102%	0.90	0.90
Hot water tank insulation v1	34	0%	87551	100%	63094	100%	0.72	0.72
LED, tube	119	0%	-9057	100%	-5248	100%	0.58	0.58
Total	8,099	1%	1,719,485	100%	1,014,864	100%	0.59	0.59

6.4.1.2 PG&E Government and K-12 Comprehensive Program (PGE_PUB_009)

PG&E's public sector program achieved GRRs and NRRs of 100% for all three impact types (Table 6-2.). The only discrepancy found in this program was for the EUL of some of the lighting measure claims. For some of these claims, an EUL of 11.4 was used instead of 15 as seen in the eTRM documentation.

Table 6-2. Summary of PG&E GK12 (PGE_Pub_009) tracking data correspondence with DEER values

Measure Name	Number of Claims	Claims with discrepancy	Claimed gross savings	GRR	Claimed net savings	NRR	Claimed NTGR	Evaluated NTGR
kW								
LED, Tube	12	8%	14	100%	8	100%	0.60	0.60
Total	12	8%	14	100%	8	100%	0.60	0.60
kWh								
Heat Pump Water Heater	1	0%	-7,130	100%	-7,130	100%	1.00	1.00
LED, Tube	12	8%	117,800	100%	91,412	100%	0.78	0.78
Total	13	8%	110,670	100%	84,282	100%	0.76	0.76
Therms								
Heat Pump Water Heater	1	0%	864	100%	864	100%	1.00	1.00
LED, Tube	12	8%	-1,287	100%	-1,011	100%	0.79	0.79
Total	13	8%	-423	100%	-147	100%	0.35	0.35

6.4.1.3 PG&E Multifamily Energy Savings Program (PGE_RES_003)

The only discrepancy found within this program was for the Smart Thermostat measure. For this measure the program used the "Res-Default>2" NTG_ID instead of the "Res-sAll-mHVAC-SCT-dn" NTG_ID. The NTGRs used are the same and therefore the discrepancy had no impact on the NRR (Table 6-3.).

Table 6-3. Summary of PG&E MESP (PGE_Res_003) tracking data correspondence with DEER values

Measure Name	Number of Claims	Claims with discrepancy	Claimed gross savings	GRR	Claimed net savings	NRR	Claimed NTGR	Evaluated NTGR
kW								
Low-Flow Showerhead	7	0%	37	100%	20	100%	0.55	0.55
Total	7	0%	37	100%	20	100%	0.55	0.55
kWh								
Low-Flow Showerhead	7	0%	181,299	100%	99,715	100%	0.55	0.55
Smart Thermostat	6	100%	123,198	100%	67,759	100%	0.55	0.55
Total	13	46%	304,497	100%	167,474	100%	0.55	0.55
Therms								
Domestic Hot Water Loop Temperature Controller	32	0%	28,668	100%	15,768	100%	0.55	0.55
Smart Thermostat	6	100%	3,985	100%	2,192	100%	0.55	0.55
Total	38	16%	32,653	100%	17,959	100%	0.55	0.55

6.4.1.4 SCG Community Language Efficiency Outreach Program (SCG3861)

The two discrepancies found in those programs are for the Tankless Water Heater measure and Water Heater Pipe Wrap measures (Table 6-4.). For the Water Heater Pipe Wrap measure, the program used the “Res-Default>2” NTG_ID instead of the “All-Default<=2yrs” NTG_ID found in the eTRM measure package. The “All-Default<=2yrs” NTG_ID that is reserved for new measures using technology that is less than 2 years old. This NTG_ID has a NTGR of 0.7, which is higher than 0.55 NTGR of the “Res-Default>2” NTG_ID. The newer version of this measure package no longer uses the new technology NTG_ID, which might explain why it was not used for these claims, even though they referenced the original measure package version. This same discrepancy for this measure was identified across multiple programs and PAs. For the Tankless Water Heater measure, the 96% NRR and GRR are simply due to a rounding error.

Table 6-4. Summary of SCG CLEO (SCG3861) tracking data correspondence with DEER values

Measure Name	Number of Claims	Claims with discrepancy	Claimed gross savings	GRR	Claimed net savings	NRR	Claimed NTGR	Evaluated NTGR
kW								
Tankless Water Heater, Res	54	0%	-0.03	96%	-0.02	96%	0.57	0.57
Total	54	0%	-0.03	96%	-0.02	96%	0.57	0.57
kWh								
Tankless Water Heater, Res	54	0%	-204	100%	-116	100%	0.57	0.57
Smart Thermostat	637	0%	93,368	100%	84,031	100%	0.90	0.90
Total	691	0%	93,164	100%	83,916	100%	0.90	0.90
Therms								
Diverting Tub Spout with TSV	406	0%	4,981	100%	2,937	100%	0.59	0.59
Tankless Water Heater, Res	54	0%	5,078	100%	2,879	100%	0.57	0.57
Faucet Aerator	3,523	0%	25,448	100%	16,522	100%	0.65	0.65
Water Heater Pipe Wrap	407	84%	2,560	100%	1,531	121%	0.60	0.72
Low-Flow Showerhead v2	1,980	0%	6,865	100%	5,013	100%	0.73	0.73
Smart Thermostat	637	0%	6,724	100%	6,052	100%	0.90	0.90
Total	7,007	5%	56,770	100%	38,595	101%	0.68	0.69

6.4.1.5 SCG Small and Medium Commercial EE Program (SCG3882)

The Tankless Water Heater measure is the only one within this program that had any discrepancies (Table 6-5.). The eTRM documentation for this measure includes a small negative electric demand impact that was not claimed by this program.

Table 6-5. Summary of SCG SMCP (SCG3882) tracking data correspondence with DEER values

Measure Name	Number of Claims	Claims with discrepancy	Claimed gross savings	GRR	Claimed net savings	NRR	Claimed NTGR	Evaluated NTGR	Measure Name	Number of Claims
kW										
Tankless Water Heater, Com	10	100%	-	-0.32	-	-	-0.19	-	-	60%
Total	10	100%	-	-0.32	-	-	-0.19	-	-	60%
kWh										
Demand Control for Centralized WH Recirculation Pump	9	0%	2,456	2,454	100%	1,474	1,472	100%	60%	60%
Tankless Water Heater, Com	10	100%	-2,776	-2,776	100%	-1,666	-1,666	100%	60%	60%
Total	19	53%	-320	-322	101%	-192	-193	101%	60%	60%
Therms										
Low-Flow Showerhead v3	93	0%	570	570	100%	342	342	100%	60%	60%
Steam Trap	88	0%	13,362	13,328	100%	9,086	9,063	100%	68%	68%

Measure Name	Number of Claims	Claims with discrepancy	Claimed gross savings	GRR	Claimed net savings	NRR	Claimed NTGR	Evaluated NTGR	Measure Name	Number of Claims
Gas Dryer Modulating Valve	51	0%	26,071	26,061	100%	15,643	15,637	100%	60%	60%
Demand Control for Centralized WH Recirculation Pump	9	0%	4,661	4,659	100%	2,797	2,796	100%	60%	60%
Tankless Water Heater, Com	10	100%	19,412	19,412	100%	11,647	11,647	100%	60%	60%
Total	251	4%	64,077	64,031	100%	39,515	39,485	100%	62%	62%

6.4.1.6 SCG Residential Advanced Clean Energy Program (SCG3883)

Within the SCG Res ACE Program, the only measures that featured discrepancies when compared to eTRM documentation were Faucet Aerator and Water Heater Pipe Wrap (Table 6-6.). For the faucet aerator measure, the program neglected to claim the Multifamily-specific NTG_ID that is used in the eTRM measure package. This led to slightly lower net savings with an NTGR of 0.59 instead of the 0.65 used by the eTRM. For the Water Heater Pipe Wrap measure, the program used the “Res-Default>2” NTG_ID instead of the “All-Default<=2yrs” NTG_ID found in the eTRM measure package. The “All-Default<=2yrs” NTG_ID that is reserved for new measures using technology that is less than 2 years old. This NTG_ID has an NTGR of 0.7, which is higher than 0.55 NTGR of the “Res-Default>2” NTG_ID. The newer version of this measure package no longer uses the new technology NTG_ID, which might explain why it was not used for these claims, despite the fact that they referenced the original measure package version. This same discrepancy for this measure was identified across multiple programs and PAs.

Table 6-6. Summary of SCG Res ACE (SCG3883) tracking data correspondence with DEER values

Measure Name	Number of Claims	Claims with discrepancy	Claimed gross savings	GRR	Claimed net savings	NRR	Claimed NTGR	Evaluated NTGR
kW								
Duct Seal v3	3,768	0%	1,013	100%	637	100%	0.63	0.63
Tankless Water Heater, Res	43	0%	-0.03	97%	-0.02	98%	0.59	0.60
Duct Seal v2	3,902	0%	1,133	100%	705	100%	0.62	0.62
Total	7,713	0%	2,146	100%	1,342	100%	0.63	0.63
kWh								
Duct Seal v3	3,768	0%	754,860	100%	479,051	100%	0.63	0.63
Tankless Water Heater, Res	43	0%	-181	100%	-107	100%	0.59	0.59
Duct Seal v2	3,902	0%	1,138,594	100%	707,935	100%	0.62	0.62
Smart Thermostat	5,808	0%	1,221,507	100%	1,099,357	100%	0.90	0.90
Total	13,521	0%	3,114,781	100%	2,286,236	100%	0.73	0.73
Therms								
Duct Seal v3	3,768	0%	85,319	100%	54,521	100%	0.64	0.64
Diverting Tub Spout with TSV	274	0%	2,730	100%	1,620	100%	0.59	0.59
Tankless Water Heater, Res	43	0%	3,908	100%	2,313	100%	0.59	0.59
Faucet Aerator	5,048	51%	40,983	100%	26,286	104%	0.64	0.66
Water Heater Pipe Wrap	5,255	69%	51,210	100%	33,080	116%	0.65	0.75
Low-Flow Showerhead v2	5,148	0%	25,348	100%	19,474	100%	0.77	0.77
Duct Seal v2	3,902	0%	97,929	100%	62,061	100%	0.63	0.63
Intermittent Pilot Light	4	0%	55	100%	30	100%	0.55	0.55
TSV with and without Low-Flow Showerhead	4,712	0%	20,214	100%	13,679	100%	0.68	0.68
Smart Thermostat	5,808	0%	75,314	100%	67,783	100%	0.90	0.90
Total	33,962	18%	403,009	100%	280,846	102%	0.70	0.71

6.4.1.7 SCG Comprehensive Manufactured Home Program (SCG3884)

As Table 6-7. indicates, the SCG Comprehensive Manufactured Home Program also had minimal discrepancies when compared to eTRM documentation. The program achieved a GRR of 100% for all three impact types (kW, kWh, and Therms).

For the Water Heater Pipe Wrap measure, the program used the “Res-Default>2” NTG_ID instead of the “All-Default<=2yrs” NTG_ID found in the eTRM measure package. The “All-Default<=2yrs” NTG_ID that is reserved for new measures using technology that is less than 2 years old. This NTG_ID has a NTGR of 0.7, which is higher than 0.55 NTGR of the “Res-Default>2” NTG_ID. The newer version of this measure package no longer uses the new technology NTG_ID, which might explain why it was not used for these claims, even though they referenced the original measure package version. This same discrepancy for this measure was identified across multiple programs and PAs.

Discrepancies within the TSV and Smart Thermostat measures were due to claimed savings that did not match eTRM savings for the claimed building type. For example, some of these claims had savings that match the Manufactured Home building type but were claimed to be a Single-family building type (and vice versa). Ultimately only a small percentage of claims had this issue, leading to a minimal impact on the GRR.

Table 6-7. Summary of SCG CMHP (SCG3884) tracking data correspondence with DEER values

Measure Name	Number of Claims	Claims with discrepancy	Claimed gross savings	GRR	Claimed net savings	NRR	Claimed NTGR	Evaluated NTGR
kW								
Duct Seal v3	1,010	0%	273	100%	183	100%	0.67	0.67
Tankless Water Heater, Res	54	0%	-0.03	101%	-0.02	101%	0.58	0.58
Duct Seal v2	1,895	0%	697	100%	489	100%	0.70	0.70
Furnace	1	0%	0.07	100%	0.04	100%	0.55	0.55
Total	2,960	0%	970	100%	672	100%	0.69	0.69
kWh								
Duct Seal v3	1,010	0%	538,857	100%	355,979	100%	0.66	0.66
Tankless Water Heater, Res	54	0%	-191	100%	-111	100%	0.58	0.58
Duct Seal v2	1,895	0%	1,238,749	100%	866,712	100%	0.70	0.70
Furnace	1	0%	118	100%	65	100%	0.55	0.55
Smart Thermostat	859	1%	236,743	100%	213,068	100%	0.90	0.90
Total	3,819	0%	2,014,276	100%	1,435,713	100%	0.71	0.71
Therms								
Duct Seal v3	1,010	0%	12,782	100%	8,289	100%	0.65	0.65
Diverting Tub Spout with TSV	18	0%	170	100%	105	100%	0.61	0.61
Tankless Water Heater, Res	54	0%	4,896	100%	2,856	100%	0.58	0.58
Faucet Aerator	1,547	1%	8,338	100%	5,900	100%	0.71	0.71
Water Heater Pipe Wrap	1,895	60%	43,671	100%	29,869	112%	0.68	0.77
Low-Flow Showerhead v2	809	0%	3,984	100%	3,035	100%	0.76	0.76
Duct Seal v2	1,895	0%	26,542	100%	19,293	100%	0.73	0.73
Furnace	1	0%	8	100%	4	100%	0.55	0.55
TSV with and without Low-Flow Showerhead	594	2%	2,399	100%	1,656	100%	0.69	0.69
Smart Thermostat	859	1%	6,000	101%	5,400	101%	0.90	0.90
Total	8,682	13%	108,789	100%	76,407	105%	0.70	0.74

6.5 Appendix E: Stratified sampling

The approach placed property manager participants into segments by measure type. We placed the segments into savings strata, measured in a common unit of Mbtu that reflect kWh and therms savings, and estimated appropriate sample sizes to

achieve the desired relative precision at 90% confidence for each measure type. Given the relatively limited number of participants, the desired precision for the non-residential programs targets measure type and not program to group like participants across service territories/programs. Table 6-8. presents a summary of the property manager sample design which targets $\pm 10\%$ relative precision across the programs and $\pm 20\%$ precision or better for any given measure.

Table 6-8. Property manager sample design results summary

Measure name	Accounts	First year combined savings (Mbtu)	Error ratio	Sample	Expected Relative Precision
Indoor LED Lighting	68	1,360	0.5	12	20.30%
Pipe Insulation	252	55,597	0.5	18	13.80%
Tank Insulation	325	102,019	0.5	32	13.70%
Total	645	158,976	0.5	62	10.00%

Table 6-9. presents the stratification for the property manager sample design. Each measure was divided into 3 strata based on the first year Mbtu savings. The indoor lighting and pipe insulation measures had large savings sites that were selected into the sample with certainty. The table presents for each strata the cut point, number of accounts in the population, total savings (Mbtu), number of sample points, and the inclusion probability.

Table 6-9. Property manager sample design stratification

Measure name	Stratum	Maximum first year combined savings (Mbtu)	Accounts	Total first year combined savings (Mbtu)	Sample	Inclusion probability
Indoor LED lighting	1	12	47	205	3	0.06
	2	45	10	261	3	0.3
	3	63	5	294	3	0.6
	4	110	5	420	2	0.4
	5	181	1	181	1	1
Pipe insulation	1	86	187	4,518	4	0.02
	2	292	42	6,060	4	0.1
	3	1,133	15	8,436	4	0.27
	4	3,061	5	10,680	3	0.6
	5	10,412	3	25,901	3	1
Tank insulation	1	207	189	18,926	8	0.04
	2	474	75	23,403	8	0.11
	3	965	38	27,203	8	0.21
	4	2,430	23	32,487	8	0.35

6.6 Appendix F: NTGR survey scoring

For the local 3PPs, DNV used a standard NTGR approach that assesses three dimensions of free-ridership: timing, quantity, and efficiency. The programs induce savings if they accelerate the timing of measure installation, increase the number of measures installed, or raise the efficiency level of what was installed.

The timing dimension is relevant to all measures. Quantity and efficiency are relevant for certain measures and not for others. For example, it is almost always the case that the entire duct system is treated at once, so quantity would always be one. Similarly, the ducts are either sealed or not, so there is not a variable level of efficiency as there would be for a furnace. The following provides measures and dimensions covered by participant type in the PY2021 local 3PP evaluation:

- **Smart thermostats (timing, efficiency, quantity for multifamily)** - For smart thermostats, the residential and multifamily property manager surveys asked about “efficiency” in terms of the type of thermostats that would otherwise have been installed but rated these at only 2 levels—smart (efficient) or not. Residential Local 3PP participants could only receive a single smart thermostat so that the quantity dimension is not applicable. However, survey respondents who are multifamily property managers could be responsible for multiple homes and could have decided to install the thermostats in more or fewer units. Thus, the quantity dimension is applicable to multifamily survey respondents.
- **Fan motor replacement (timing, efficiency)** – Fan motors in could be repaired or replaced with a standard rather than a brushless motor, therefore the efficiency dimension is relevant for fan motors. For residential programs, a quantity of one is assumed for fan controls.
- **Fan motor controls (timing)** – We assumed a single fan motor per household in residential programs. As a controller, it is either installed or not – there are no varying levels of efficiency for fan motor controllers.
- **Duct sealing (timing)** – As noted above, duct sealing happens for the entire home and there are no variable levels of efficiency and quantity for residential programs.
- **Tune-up (timing)** – Similarly to fan motor controls and duct sealing, for residential HVAC tune-ups there are no variable levels of efficiency and quantity.
- **Furnace (timing, efficiency)** – We assumed a single furnace measure per household in residential programs, but there are varying levels of efficiency that can be installed.
- **Modulating gas valve (timing, quantity)** – Modulating gas valves for non-residential (commercial) participant furnaces do not have varying levels of efficiency, but the quantity dimension is applicable.
- **Tankless water heater (timing, efficiency, quantity)** – Water heaters in residential and non-residential (commercial) programs could be replaced with standard water or high efficiency tankless water heaters. Participants in the programs could also install more than one unit.
- **Heat pump water heater (timing, efficiency, quantity)** – Non-residential (public sector) participants could have installed standard water heaters or high efficiency heat pump water heaters. The quantity dimension is also applicable for this group of participants.
- **Water heating controls (timing, quantity)** – As a controller, this measure is either installed or not – there are no varying levels of efficiency for water heating controls, but the quantity dimension is applicable among multifamily and non-residential (commercial) where the measures were installed.
- **Boiler steam trap (timing, quantity)** – Boiler steam traps in the non-residential (commercial) installations do not have varying levels of efficiency, but the quantity dimension is applicable.
- **Showerhead (timing, quantity)** – For showerheads, there are no varying levels of efficiency, but the quantity dimension is applicable in both the residential and multifamily programs.
- **Faucet aerator (timing, quantity)** – Similar to showerheads, faucet aerators do not have varying levels of efficiency, but the quantity dimension is applicable in both the residential and multifamily programs.
- **Pipe insulation (timing, quantity for multifamily)** – There are no varying levels of efficiency for pipe insulation and happens for the entire home in the residential programs. Survey respondents who are multifamily property managers could be responsible for common areas and multiple homes and could have decided to install pipe insulation in more or fewer units. Thus, the quantity dimension is applicable to multifamily survey respondents.
- **Tanks insulation (timing, quantity for multifamily)** – Similarly to pipe insulation, tank insulation happens for the entire home in residential programs and there are no variable levels of efficiency and quantity. It could have been installed in more or fewer units in multifamily programs and, thus, the quantity dimension is applicable to multifamily survey respondents.



- **Indoor LED lighting (timing, efficiency, quantity for non-residential and multifamily)** – Lighting could be replaced with a standard or efficient version. Therefore, the efficiency dimension is relevant lighting. For non-residential and multifamily programs, the quantity dimension is also applicable.

The NTGR survey scoring elements are summarized below in Table 6-10.

Table 6-10. Free-ridership elements by survey respondent type, PY2021

Free-ridership Dimension	Measures Applicable	Question Wording	Answer	Free-Ridership Score
Timing - (FR _t)	All measures	Without the program offering on [INSTALL DATE], when would you have completed this project?	At the same time or sooner	1
			1 to 24 months later	(24 - # of months)/24
			More than 24 months later	0
			Never	0
			Don't know	Average of non-Don't know answers
Efficiency - (FR _e)	Smart thermostats	Smart thermostats come in a variety of models. There are BASIC models that cost about \$120 to \$150 (e.g., Nest E, Ecobee3 lite, Honeywell T5) and UPGRADED advanced models that offer additional sensing technology (e.g., Nest Learning 3rd Gen, Ecobee 4, Honeywell T9) and cost about \$210 to \$250. And there a programmable and non-programmable thermostats which costs range from \$20 to \$100. If the program didn't offer a smart thermostat in 2021, which model would you have likely purchased?	Would have purchased the BASIC model smart thermostat(s)	1
			Would have purchased the UPGRADED model smart thermostat(s)	1
			Would have purchased standard programmable thermostat(s); (e.g., without smart capabilities)	0
			Would NOT have purchased any thermostat(s)	0
	Furnace	We would also like to know what influence the [IOU] program had, if any, on the decision to install new high efficiency HVAC furnace equipment. Without the program, which of the following would you have done?	Would have purchased STANDARD efficiency HVAC furnace	0
			Would have purchased HIGH EFFICIENCY HVAC furnace	1
			Would NOT have purchased a HVAC furnace	0
	Indoor LED Lighting	We would also like to know what influence the [IOU] program had, if any, on the decision to install new high efficiency indoor LED lighting. Without the program, which of the following would you have done?	Would have purchased STANDARD efficiency Indoor LED lights	0
			Would have purchased ENERGY STAR Indoor LED lights	1
			Would NOT have purchased any Indoor LED lights	0
	Water Heater (Heat Pump/Tankless)	We would also like to know what influence the [IOU] program had, if any, on the decision to install new high efficiency Water Heating equipment. Without the program, which of the following would you have done?	Would have purchased STANDARD efficiency water heater	0
			Would have purchased HIGH EFFICIENCY heat pump water heater	1
			Would NOT have purchased any water heater	0

Free-ridership Dimension	Measures Applicable	Question Wording	Answer	Free-Ridership Score
	Fan motor replacements	We would also like to know what influence the program had, if any, on the decision to have a technician install a new FAN MOTOR on the furnace. Without the program, which of the following would you have done?	Replace with a high efficiency motor (i.e., brushless) similar to the one I received from the program	1
			Replace with a standard motor	0
			Repair the existing equipment	0
			Nothing, no replacement, or repair	0
Quantity- (FR _q)	Showerheads and faucet aerators	Without the program, how many [showerheads/aerators] would you have installed at your own expense?	None	0
			1	1 – ((n - answer)/n), where n is the number of measures installed through the program
			2	
			3	
			4	
			5 or more	Average of non-Don't know answers
Don't know				

Using these metrics in combination allowed us to fully assess the amount of savings that could be attributed to measures that participants would have installed absent program support. We assigned each respondent a score for each free-ridership metric based on their survey responses and combined those scores into an overall free-ridership score using the algorithms in Equations 1 through 3.

Equation 1: Free-ridership Scoring Algorithm for smart thermostats and fan motor replacements

$$\text{Free-ridership} = \text{FR_timing score} * \text{FR_efficiency score}$$

Equation 2: Free-ridership Scoring Algorithm for fan motor controls and duct sealing

$$\text{Free-ridership} = \text{FR_timing score}$$

Equation 3: Free-ridership Scoring Algorithm for showerheads and faucet aerators

$$\text{Free-ridership} = \text{FR_timing} * \text{FR_quantity}$$

Program attribution or NTGRs are simply the complement of free-ridership and estimated as: $NTGR = 1 - \text{Free-ridership}$.

Measure and program level NTGRs derived from participant surveys are weighted by savings claims to compute measure and program attribution estimates.

6.7 Appendix G: Sample weights

DNV presents summaries of the sample weights developed for the net attribution analysis (NTGR) and demographic surveys in this section.

Participant net attribution analysis: For the net attribution analysis, we merged the survey data with the program tracking data by customer and measure. Weights were calculated by measure type, building type, and hard-to-reach status. Within each of these cells, weights for most measures were calculated using a simple random sampling approach due to the uniformity of measure savings within a specific measure type and cell. Because the savings distribution within the tank insulation and pipe insulation cells were variable, it was appropriate to calculate weights for these measures based on three savings strata.



Table 6-11 presents the post stratification weights for the participant survey NTG results.

Table 6-11. Participant NTG survey post stratification weights

Building Type	Measure Name	HTR Status	Stratum	Maximum First Year Gross Savings (btu)	Accounts	First Year Gross Savings (btu)	Sample	Weight
Multifamily	Faucet aerator	HTR	1	243,920,887	4	392,088,701	1	4
Multifamily	Faucet aerator	Non-HTR	2	235,389,647	22	1,485,728,354	1	22
Multifamily	Indoor LED lighting	HTR	10	120,362,606	12	277,011,206	3	4
Multifamily	Indoor LED lighting	Non-HTR	11	361,446,182	56	2,443,315,832	14	4
Multifamily	Pipe insulation	Non-HTR	13	798,567,492	159	18,399,118,249	9	17.67
Multifamily	Pipe insulation	Non-HTR	14	6,122,787,185	10	28,954,951,737	2	5
Multifamily	Pipe insulation	Non-HTR	15	20,824,820,679	3	51,802,576,734	1	3
Multifamily	Showerhead	HTR	16	89,709,777	4	148,122,224	1	4
Multifamily	Showerhead	Non-HTR	17	290,981,397	32	2,138,317,074	9	3.56
Multifamily	Smart thermostat	Non-HTR	18	503,141,280	7	1,638,329,451	5	1.4
Multifamily	Tank insulation	Non-HTR	19	562,451,742	221	53,341,129,542	4	55.25
Multifamily	Tank insulation	Non-HTR	20	1,659,082,425	71	67,098,731,510	3	23.67
Multifamily	Tank insulation	Non-HTR	21	4,859,152,865	33	83,598,079,403	5	6.6
Multifamily	Water heating controls	Non-HTR	22	992,910,638	30	5,732,305,651	21	1.43
Single Family / Mobile Home	Faucet aerator	HTR	23	4,435,820	2454	2,477,247,825	156	15.73
Single Family / Mobile Home	Faucet aerator	Non-HTR	24	4,727,021	4954	5,996,279,908	370	13.39
Single Family / Mobile Home	HVAC duct test and seal	HTR	25	46,803,000	3759	17,068,826,599	167	22.51
Single Family / Mobile Home	HVAC duct test and seal	Non-HTR	26	27,663,840	6507	32,802,047,020	415	15.68
Single Family / Mobile Home	HVAC indoor coil cleaning	HTR	28	1,772,556	295	73,214,296	16	18.44
Single Family / Mobile Home	HVAC indoor coil cleaning	Non-HTR	29	1,575,605	524	129,565,266	34	15.41
Single Family / Mobile Home	HVAC fan motor controller	HTR	30	8,175,010	144	363,050,738	8	18
Single Family / Mobile Home	HVAC fan motor controller	Non-HTR	31	5,450,007	278	692,112,536	21	13.24
Single Family / Mobile Home	HVAC fan motor replacement	HTR	32	1,988,976	129	193,205,448	1	129
Single Family / Mobile Home	HVAC fan motor replacement	Non-HTR	33	1,988,976	165	257,151,991	1	165
Single Family / Mobile Home	HVAC indoor fan repair	HTR	34	413,912	276	19,405,698	15	18.4
Single Family / Mobile Home	HVAC indoor fan repair	Non-HTR	35	223,736	480	33,378,706	34	14.12
Single Family / Mobile Home	HVAC RCA	HTR	36	30,341,122	296	1,257,873,980	16	18.5
Single Family / Mobile Home	HVAC RCA	Non-HTR	37	26,969,887	528	2,234,806,640	34	15.53
Single Family / Mobile Home	Pipe insulation	HTR	40	15,071,263	3041	10,792,202,470	153	19.88
Single Family / Mobile Home	Pipe insulation	Non-HTR	41	54,115,544	5757	16,925,008,189	344	16.74

Building Type	Measure Name	HTR Status	Stratum	Maximum First Year Gross Savings (btu)	Accounts	First Year Gross Savings (btu)	Sample	Weight
Single Family / Mobile Home	Showerhead	HTR	42	6,282,053	3352	3,396,113,040	207	16.19
Single Family / Mobile Home	Showerhead	Non-HTR	43	9,408,627	5085	6,202,788,344	370	13.74
Single Family / Mobile Home	Smart thermostat	Non-HTR	44	10,784,063	7656	29,223,366,243	470	16.29
Single Family / Mobile Home	Tankless water heater	HTR	47	19,067,729	15	274,555,118	2	7.5
Single Family / Mobile Home	Tankless water heater	Non-HTR	48	36,214,006	135	2,497,176,971	9	15
Commercial	Boiler steam traps	Non-HTR	49	202,773,763	8	1,335,921,256	4	2
Commercial	Modulating gas valve	Non-HTR	51	153,324,275	38	2,606,512,674	31	1.23
Commercial	Tankless water heater	Non-HTR	53	1,039,339,785	2	1,931,308,771	2	1
Commercial	Water heating controls	Non-HTR	54	113,220,915	8	474,404,987	8	1
Public	Indoor LED lighting	Non-HTR	55	151,449,416	5	273,253,910	5	1

Demographic survey analysis: To calculate site level weights for the participant survey respondent demographics analysis, we merged the survey data with the program tracking data by customer and measure. Weights were calculated by building type and hard-to-reach status. Within each of these cells (domains), weights were calculated based on three savings strata. Table 6-12 presents the post stratification weights for the participant survey results.

Table 6-12. Participant demographic survey analysis post stratification weights

Building Type	HTR Status	Stratum	Maximum First Year Gross Savings (btu)	Accounts	First Year Gross Savings (btu)	Sample	Weight
Multifamily	HTR	1	579,427,322	65	16,400,000,000	6	10.83
Multifamily	HTR	2	1,332,122,547	26	21,300,000,000	5	5.20
Multifamily	HTR	3	3,667,868,290	13	24,900,000,000	4	3.25
Multifamily	Non-HTR	4	843,890,942	226	62,500,000,000	53	4.26
Multifamily	Non-HTR	5	2,640,165,550	53	84,600,000,000	18	2.94
Multifamily	Non-HTR	6	20,824,820,679	19	119,000,000,000	8	2.38
Single Family	HTR	7	4,034,243	2617	5,320,000,000	96	27.26
Single Family	HTR	8	6,830,969	1151	6,220,000,000	35	32.89
Single Family	HTR	9	28,791,671	768	7,000,000,000	42	18.29
Single Family	Non-HTR	10	5,935,757	6175	17,800,000,000	294	21.00
Single Family	Non-HTR	11	9,974,439	2751	21,700,000,000	137	20.08
Single Family	Non-HTR	12	36,214,006	1690	23,600,000,000	91	18.57
Mobile Home	HTR	13	6,019,287	1302	5,280,000,000	26	50.08
Mobile Home	HTR	14	10,486,733	737	5,970,000,000	18	40.94
Mobile Home	HTR	15	235,882,885	458	7,010,000,000	14	32.71
Mobile Home	Non-HTR	16	8,215,321	1984	9,870,000,000	31	64.00
Mobile Home	Non-HTR	17	16,165,841	1057	11,400,000,000	23	45.96
Mobile Home	Non-HTR	18	691,969,020	213	19,000,000,000	2	106.50
Commercial	Non-HTR	19	99,765,014	35	1,700,000,000	22	1.59
Commercial	Non-HTR	20	190,845,894	15	2,070,000,000	11	1.36
Commercial	Non-HTR	21	1,127,296,528	6	2,970,000,000	5	1.20



6.8 Appendix H: Surveys and interview guides

6.8.1 Residential end user survey

Residential end user survey instruments used in the evaluation are included as pdf attachments.

6.8.2 Non-residential end user survey

Non-residential end user survey instruments used in the evaluation are included as pdf attachments.

6.8.3 Property manager survey

Property manager survey instruments used in the evaluation are included as pdf attachments.

6.8.4 Contractor survey

Contractor survey instruments used in the evaluation are included as pdf attachments.

6.8.5 PA interview

PA interview guides used in the evaluation are included as pdf attachments.

6.8.6 Implementer interview

Implementer interview guides used in the evaluation are included as pdf attachments.

6.9 Appendix I: Response to comments

Comment #	Commenter (self-identify by Party, PA, etc.)	Page (as shown at bottom of pdf document page); or "Overarching" for general comments	Comment/feedback/change requested	Evaluator's Response
1	PG&E	Overarching	PG&E appreciates the opportunity to review and provide comments on this draft report. It was well-written and well-organized. PG&E also appreciates the shift from a measure-level evaluation to a program-level evaluation and looks forward to this approach on-going.	Thank you for the feedback. We will take this into account for future evaluations.
2	PG&E	Overarching	PG&E agrees with the evaluation team's statement that "Local 3PPs are still in their nascent stages and more time is needed to determine the success of program delivery innovations in delivering deeper savings." (pg. 9). The PG&E Public Program (i.e., the Government and K-12 Comprehensive Program, or GK12 Program) is one example of a Local 3PP that was in its nascent stages in PY 2021 as indicated by the small number of projects reviewed, the small sample size of non-residential end users called, and the reported small percentage of budget spent.	Noted. DNV contacted all non-residential participants and ultimately collected information from the majority (83% for the GK12 Program and 66% for the Small and Medium Commercial program).
3	PG&E	45	Adoption of clean technologies in the government and K-12 segments is evident in the results shown in the table. As a mature program, the GK12 Program sees 50% of the delivered savings coming from electrification.	The GK12 program had participants with high levels of solar, battery storage, and EV adoption. However, almost all the PY2021 claimed savings based on deemed values that DNV's Group A evaluated were from lighting, with savings claims from only one heat pump water heater.
4	PG&E	69	Table 4-38 seems to indicate that the GK12 Program did not report education of customers or promoting technologies to deliver energy efficiency. However, this summary seems to contradict the findings cited on the previous report pages 61 and 62 that identified the use of these aspects in their service delivery to customers. Can the evaluation team clarify this apparent contradiction in findings?	As noted on page 61 of the report, education was listed in the implementation plan as one of the innovations that the program undertook to achieve deeper savings. It was also noted as one of the program's innovations in Table 4-38. But, as indicated in the table, there were no KPIs to track the outcome of this effort.
5	PG&E	72	PG&E requests that standard summary tables in line with the Impact Evaluation Standard Reporting Guidelines (see Appendix B of Energy Division & Program Administrator Energy Efficiency Evaluation, Measurement, and Verification Plan FINAL 2021-2023 Version 4) be provided as part of the final report: Appendix A: Gross and net lifecycle savings, Appendix B: Per unit (quantity) gross and net energy savings, and Appendix C: IESR-Recommendations resulting from the evaluation research.	Noted. These tables have been included in this revised version of the report.
6	SCG	5, 7	Table 1-3 and 1-4, Could the tables include the IOUs for each program?	Revisions made to include an IOU column in Tables 1-3 and 1-4.
7	SCG	27	Section 4-4, is there any reason the MF pipe insulation NTG should be lower than SF?	The measure package (SWWH017) assumes a lower ex-ante NTGR for MF compared to the measure package (SWWH026) for SF, and our evaluated results are consistent with that assumption. The MF measure package cited an evaluation study as the source for the NTG. There is not sufficient evidence from this evaluation to assess the specific reasons for a lower NTGR value for MF compared to SF.
8	SCG	17	Table 3-3, clarifying question: is the "No. of claims", representative of the measures installed? are the numbers obtained from CEDARS?	The number of claims in Table 3-3 is the sum of PY2021 claims reported to CEDARS for the programs. The CEDARS tracking data has columns that provide the number of measures installed and the units for these (for example, each, household, capacity, etc.) associated with each claim. The number of claims can be

a good indication of the number of measures in some cases, especially for those where units are "EACH" or "HOUSEHOLD," but not all.

9	SCG	17	Table 3-3, the DNV presentation is showing n=33 as sample size (page 29) where table 3-3 of the draft impact evaluation shows 50. Which one of these two numbers are right?	The table on page 29 in the DNV presentation provides participants that completed the survey while Table 3-3 in the report provides the participant population. In other words, the table on page 29 provides the subset (n=33) of the 50 participants who completed the survey.
12	SCG	66	Not all programs tracked outreach innovations, making it difficult to assess their true impact: Program Administration staff agrees with this suggestion. It will take it into consideration moving forward to facilitate comparison of performance among similar programs (where applicable).	Thank you. Noted. It will be useful to have KPIs or similar for program elements whose effectiveness needs to be measured.
13	SCG	66	Outreach activities appear to be one-directional, where the local 3PPs do not provide opportunities for community input into program design: SoCalGas accepts the recommendation. Program staff will advise implementers to gather input from the communities they serve to continue to innovate their program design.	Noted. Thank you.
14	SCG	66	Program delivery innovations will take time to achieve deeper savings: SoCalGas agrees with this observation.	Noted. Thank you.
15	SCG	66	The program's activities were consistent with some of the CPUC ESJ goals but not others, and more information is needed to assess consistency with several others: SoCalGas welcomes this guidance.	Noted. Thank you.
16	SCG	66	Local 3PPs are more effective than peer programs at reaching HTR and DAC customers: SoCalGas has provided support to 3PPs to encourage their success. SoCalGas looks forward to continuing to provide support as the 3PPs evolve.	Noted. Thank you.
10	SDG&E	4, 28-29	Table 1-2 and again in 4-6 shows that the Multifamily segment claimed and evaluated savings are the same, with a GRR = 100%. The evaluated NTGR = 100% as well. However, the total net evaluated savings is reduced. Should the 608,638-kWh value be increased to 609,178 given both GRR and NTGR are found to be 100%?	The NTGR = 99.9% and the tables provided rounded version of it. We have updated the values in both tables to indicate a 99.9% NTGR.
11	SDG&E	4, 28-29	Tables 1-2 and 1-3 and shown again under Table 4-6 and 4-7 have the Evaluated NTGR is higher than the claimed NTGR at the program level. Would Recommendation #1 be expanded to include these findings to increase the current DEER NTGR for similar program delivery methods, such as direct install? If so, would the recommendations be included in the next DEER Scoping Memo in 2024 (DEER 2026)?	We have updated Recommendation #1 to state "We recommend that the DEER team review the default NTG values for measures offered through downstream delivery channels." EM&V results are considered in each of the DEER scoping memos by the DEER team.



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