BEFORE THE PUBLIC UTILITIES COMMISSION
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Application of Southern California Edison Company (U338E) for Approval of its Energy Savings Assistance and California Alternate Rates for Energy Programs and Budgets for Program Years 2015-2017.	Application 14-11-007 (Filed November 18, 2014)
And Related Matters.	Application 14-11-009 Application 14-11-010 Application 14-11-011

ANNUAL REPORT OF PACIFIC GAS AND ELECTRIC COMPANY (U 39 M) ON THE RESULTS OF ITS ENERGY SAVINGS ASSISTANCE AND CALIFORNIA ALTERNATE RATES FOR ENERGY PROGRAMS

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Dated: May 1, 2020

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In accordance with Decisions 12-08-044 and 16-11-022, and the annual reporting directives contained therein, Pacific Gas and Electric Company files this Annual Report on the results of its Energy Savings Assistance and California Alternative Rates for Energy program efforts for the 2019 program year.

Respectfully Submitted,

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Pacific Gas and Electric Company®

ENERGY SAVINGS ASSISTANCE PROGRAM AND CALIFORNIA ALTERNATE RATES FOR ENERGY PROGRAM

2019 ANNUAL REPORT

May 1, 2020






ESA AND CARE PROGRAMS ANNUAL REPORT
TABLE OF CONTENTS

2019 Energy Savings Assistance (ESA) Program and California Alternate Rates for Energy Program Highlights

Pacific Gas and Electric Company (PG&E)'s ESA program[1] uses a prescriptive, direct install approach to provide free home weatherization, energy efficient appliances and energy education to income qualified customers throughout PG&E's service area.

In 2019, PG&E's ESA program provided 106,673 homes with energy efficiency (EE) improvements and services. ESA participants saved over 68 megawatt hours (mWh).

Table 1 below provides a summary of Program Year (PY) 2019 ESA expenditures and accomplishments. Additional details on PG&E's ESA program are included in Section 1 of this annual report.

Summary Table 1 - ESA Program

2019 ESA Program Summary			
2019	**Authorized / Planning Assumptions** [c]	**Actual**	**%**
Budget [a][1]	$209,387,402	160,892,974	77%
Funded from 2009-2016 Unspent Funds [b]	$59,693,950	10,126,094	17%
Summary Homes Treated	102,237	106,673	104%
Summary Kilowatt Hours (kWh) Saved		68,951,001	
Summary Kilowatts (kW) Demand Reduced		8,595	
Summary Therms Saved		(470,906)	
"First Touch" Homes Treated [d]		42,490	
- kWh Saved		26,973,891	
- kW Demand Reduced		3,384	
- Therms Saved		(160,081)	
"Go-Backs" / "Retreated" Homes [e]		64,183	
- kWh Saved		41,977,111	
- kW Demand Reduced		5,211	
- Therms Saved		(310,824)	

[a] 2018 ESA Program budget has been updated with midcycle request as per approval from Advice Letter (AL) 3990-G/5329-E A/B on January 4, 2019
[b] Unspent funds authorized in midcycle request as per approval from AL 3990-G/5329-E A/B are shown in ESA Table 1A.
[c] There were no authorized planning assumptions for "First Touch" or "Retreated" homes in D.16-11-022.
[d] 40% of customers treated in 2019 were "First Touch" customers.
[e] 60% of customers treated in 2019 were "Go-Back" customers.

[1] The ESA program is available to income qualified PG&E customers living in single family, multifamily, and mobile homes, including homeowners and renters. To qualify for the ESA program, the total customer household income must be equal to or less than 200% of the Federal Poverty Guidelines (FPG), with income adjustments for family size.

In addition to the ESA program, PG&E administers the California Alternate Rates for Energy (CARE) program. The CARE program provides a monthly discount on energy bills for qualifying residential single family households, tenants of sub-metered residential facilities, nonprofit group living facilities, food banks, agricultural employee housing facilities and migrant farm worker housing centers throughout PG&E's service area.

In 2019, PG&E estimated that over 1.4 million of its customers were eligible for the CARE discount. With a combination of Marketing and Outreach (M&O), PG&E has successfully enrolled 95.6% of the total eligible audience in PG&E's territory in the CARE program. Through year-end 2019, more than $10 billion in cumulative subsidies have been provided to PG&E's CARE customers since the inception of the CARE program.

Table 2 below provides a summary of PY 2019 CARE program expenditures and activities.

Summary Table 2 – CARE Program

2019 CARE Program Summary			
2019	**Authorized Budget**	**Actual**	**%**
Administrative Expenses	$18,683,781	$11,196,256	60%
Subsidies and Benefits	$593,186,130	$638,701,809	108%
Total Program Costs and Discounts	**$611,869,911**	**$649,898,065**	**106%**
2019 CARE New Enrollments	**Automatically Enrolled via Data Sharing, ESA Participation, etc.**	**Self-Certified as Categorically Eligible**	**Self-Certified as Income Eligible**
By Method	30,835	88,542	114,896
2019 CARE Penetration	**Estimated Eligible Participants**	**Participants**	**Penetration Rate**
Total Enrolled	1,446,414	1,382,663	95.6%

1. ESA Program

ESA Program 2019 Overview

The ESA program provides free home weatherization, energy-efficient appliances and energy education services to income qualified PG&E customers[2] throughout the Company's service territory. The 2017-2020 ESA program[3] [4] continues as a resource program emphasizing long-term and enduring energy savings, serving all willing and eligible low income customer populations by providing all feasible ESA program measures at no cost to the customer, through a direct-install approach. All housing types are eligible to participate, and the ESA program is available to both homeowners and renters.

1.1. Alignment of ESA Program with Strategic Plan Goals and Strategy

The long-term California Energy Efficiency Strategic Plan (CEESP) set forth a vision that by 2020, 100% of all eligible and willing income qualified customers will have received all cost-effective low income EE measures.[5] The CEESP lays out two goals in achieving the vision via the ESA program: 1) by 2020, all eligible customers will be given the opportunity to participate in the ESA program; and 2) the ESA program will be an energy resource by delivering increasingly cost-effective and longer-term savings. Sections 1.1.1 and 1.1.2 provide a high-level overview of PG&E's 2019 strategies and tactics employed to meet the CEESP goals and achieve its ambitious vision.

1.1.1. Please identify the Investor Owned Utility (IOU) strategies employed in meeting

Goal 1: Improve Customer Outreach

Throughout 2019, PG&E continued to build on the CEESP strategies through a variety of tactics to improve customer outreach as detailed in Table 1.1.1.[6]

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[2] To qualify for the ESA program, a residential customer's household income must be at or below 200% of FPG, as required in D.05-10-044.

[3] Authorized in D.16-12-022 as modified by D.17-12-009.

[4] The 2017-2020 ESA program continues to follow the policy and guidance outlined in D.07-12-051, which required the IOUs to offer all eligible customers the opportunity to participate in the program, and to offer participants all cost-effective energy efficiency measures by 2020.

[5] California Energy Efficiency Strategic Plan. California Public Utilities Commission (CPUC). July 2008, updated January 2011.

[6] Table 1.1.1 – Tactics to Improve Customer Outreach

Table 1.1.1 – Tactics to Improve Customer Outreach

Implementation Plan and Timeline		
Strategies	**Term 2017-2020**	**IOU Tactics Employed in 2019**
1: Strengthen ESA program outreach using segmentation analysis and social marketing tools.	**Continue to assess and evaluate customer behavior and energy savings; improve upon outreach to eligible communities.**	In 2019, PG&E continued an optimized multi-touch customer M&O, which included: direct mail, email, bill inserts, digital (including social media) campaigns, PG&E's digital newsletter and other integrated marketing touchpoints. These are discussed in Section 1.4. The outreach was targeted to CARE-enrolled customers living in ESA-eligible homes with a high propensity for participation based on data modeling.
1.2: Develop a recognizable and trustworthy Brand/Tagline for the ESA program.	**Evaluate progress/refine strategy.**	PG&E continued to use the ESA program statewide name and brand identity. PG&E refined its marketing strategy to reach more customers throughout 2019. M&O strategies are discussed in Section 1.4.
1.3: Improve program delivery	**Ongoing: Use information from segmentation analysis to achieve efficiencies in program delivery.** **Ongoing: Leverage with local, state, and federal agencies as well as other organizations to increase seamless coordination, efficiency and enrollment.**	PG&E leveraged various community organizations' programs and knowledge of their communities to promote and enroll customers in the ESA program throughout 2019. Leveraging and integration efforts are described in Sections 1.7 and 1.8.

Implementation Plan and Timeline		
Strategies	**Term 2017-2020**	**IOU Tactics Employed in 2019**
1.4: Promote the growth of a trained ESA program workforce.	**Implement ESA program workforce education and training.** **Coordinate ESA program workforce and service providers with broader market.**	PG&E continued to implement education and training for ESA contractors [Energy Specialists (ES), Weatherization Specialists, Duct Test and Seal technicians and Natural Gas Appliance Testing (NGAT) technicians]. PG&E trained over 580 ESA contractor staff in 2019. In addition, 6 high school students attended training to learn about EE careers. These efforts are discussed in Section 1.9.

1.1.2. Please identify the IOU strategies employed in meeting Goal 2: ESA Program is an Energy Resource

In 2019, PG&E employed a variety of tactics to ensure the ESA program is a valued energy resource. These tactics are outlined in Table 1.1.2.[7]

Table 1.1.2 – Tactics to Position ESA as an Energy Resource

Implementation Plan and Timeline		
Strategies	**Term 2017-2020**	**IOU Strategy Employed This Program Year**
2.1: Increase collaboration and leveraging of other low income programs and services	**Continue to expand partnerships with stakeholders and seek new opportunities for data sharing.**	PG&E partnered with community-based organizations (CBOs) and other PG&E programs to promote ESA, CARE, and other low income programs. See Sections 1.7 and 1.8 for other examples of ESA leveraging and partnerships.

[7] Table 1.1.2 – Tactics to Value ESA as an Energy Resource

Implementation Plan and Timeline		
Strategies	**Term 2017-2020**	**IOU Strategy Employed This Program Year**
2.2: Coordinate and communicate between ESA program, EE and Demand-Side Management (DSM) programs to achieve service offerings that are seamless for the customer.	**Continually reevaluate and update programs to take advantage of new technologies.**	ESA continued to collaborate with PG&E's EE program and IOUs to consider new technologies for inclusion in the ESA program. For example, PG&E launched the smart thermostat measure in 2019. To drive better integration of messaging and minimize confusion for customers, PG&E leverages its marketing and communications team to provide coordinated information and outreach on all its income qualified and other DSM programs. See Section 1.4.
2.3: Provide low income customers with measures that result in the most savings in the ESA program.	**Continue to assess and evaluate opportunities to incorporate new energy efficiency measures into the ESA program, e.g., plug-load reduction, new heating, ventilation, and air conditioning (HVAC) technology.**	In 2019, PG&E introduced new measures into the program which include smart thermostats, high efficiency furnaces, heat pump water heaters, blower motor retrofits, and heat pumps. In addition, PG&E launched its load disaggregation project, which is designed to provide customers customized information about energy savings opportunities. See Section 1.4 and 1.13 for details on energy savings opportunities.
2.4: Increase delivery of efficiency programs by identifying segmented concentrations of customers.	**Continue to evaluate approach to determine whether additional segments are needed.**	PG&E continued to use its ESA propensity model that includes a wide array of data variables for both the customer and the home. The model focuses marketing investment among customers with the highest propensity to participate, enhancing media targeting and lowering marketing costs.

Implementation Plan and Timeline		
Strategies	**Term 2017-2020**	**IOU Strategy Employed This Program Year**
		PG&E continued to deploy direct mail and email campaigns targeting customers in the top two deciles of the propensity model. PG&E also continued to provide targeted referral lists to ESA subcontractors to help them locate and target high-poverty areas. See Section 1.4 for more details.

1.2. ESA Program Overview

1.2.1. Provide a summary of the Energy Savings Assistance program elements as approved in D.12-08-044.

The ESA Program Summary Table below compares PY 2019 authorized budgets and targets to PY 2019 actuals and achievements.

Table 1.2.1 – ESA Program Summary

PY 2019 ESA Program Summary			
	Authorized/ Planning Assumptions	**Actual**	**%**
Budget [a]	$209,387,402	$160,824,974	77%
Budget from Unspent Funds [b]	$59,693,950	$10,124,094	17%
Homes Treated	102,237	106,673	104%
kWh Saved	NA	68,951,001	NA
kW Demand Reduced	NA	3,384	NA
Therms Saved	NA	(310,824)	NA

[a] Authorized budget has been updated with midcycle request as per approval from AL 3990-G/5329-E A/B

[b] Previously uncommitted 2009-2016 Unspent funds authorized in Resolution G-3531 and Non-Standard Disposition AL3990-G-A/5329-E-A, 3990-G-B/5329-E-B (January 4, 2019).

1.3. Multifamily Common (MF) Area Measure (CAM) Program

PG&E's Multifamily (MF) Common Area Measure (CAM) initiative officially launched in 2019 (soft launch in December 2018) to provide affordable MF property owners and managers energy retrofits of common areas and central systems. The program provides free technical assistance (e.g., audits and measure specifications), cash incentives, and coordination with other energy programs for whole building retrofits. The initiative is designed to provide:

- 100% of building treatment costs at income qualifying deed-restricted MF properties (for qualified EE measures)
- No-cost utility energy benchmarking services
- Coordination and treatment opportunities with ESA In-Unit
- No-cost customized technical assistance to property owners and contractors throughout the program process.

PG&E CAM offers a comprehensive measure list to property owners with opportunities in the following categories: building envelope, water heating, heating and cooling, lighting, and appliances and plug loads. A summary of the initiative's 2019 accomplishments is provided in Table 1.3.

Table 1.3 – MF CAM Accomplishments

2019 ESA CAM Program Summary			
	Authorized/ Planning Assumptions	**Actual**	**%**
Budget – Labor Expenses and Incentives	$32,620,683.00	$2,518,672.00	7.7%
Properties Treated	154	0	0%
kWh Saved	2,695,000	0	0%
kW Demand Reduced	1,540	0	0%
Therms Saved	115,500	0	0

Through targeted M&O initiatives, and a thorough application intake process to confirm affordability requirements and common area opportunity, PG&E CAM enrolled 1,463 buildings in 2019. The lead-to-enrollment conversion rate for CAM is 52%, with most of the attrition due to inability to meet the CAM income eligibility requirements.[8] Outreach initiatives include cold-calling, event attendance, hosting exhibit booths, and participation in panel sessions, webinars, and digital media (social media, newsletters, mailers). PG&E CAM also works with multiple contractors throughout PG&E's territory to generate leads and coordinate with other affordable housing programs such as California Department of Community Services and Development (CSD) Low Income Weatherization Program (LIWP) and Multifamily Upgrade Program (MUP) to layer funding and enable more comprehensive projects. In 2019, PG&E CAM audited 1,125 buildings and provided no-cost technical assistance including site energy audits, scope of work recommendations, benchmarking using ENERGY STAR® Portfolio Manager, and a standardized bid approval process. Ten ESA CAM projects involving 47 buildings reserved funding in 2019.

In the second quarter (Q2) of 2019, PG&E CAM shifted the program design from a custom savings approach to a deemed savings approach.[9] Program participation was paused until the beginning of the third quarter (Q3), which impacted overall program goals in 2019. Upon

[8] Properties must meet and have supportive documentation (e.g., from a local, state, or federal government agency such as the U.S. Department of Housing and Urban Development, the U.S. Department of Agriculture, or the California Tax Credit Allocation Committee) for deed restriction requirements in compliance with CPUC code section 2852(a). At least 65% of residents in a participating property must meet ESA income guidelines set annually by the CPUC. Currently, ESA income eligibility is at 200% of the FPG pursuant to Public Utilities Code.

[9] Upon review of program design and per direction from CPUC Energy Division (ED), PG&E pivoted from a custom savings approach, to a deemed savings approach.

finalization of the deemed savings approach, in November 2019, the program experienced rapid increase in enrollments and movement of enrolled projects through the CAM process.

1.4. Marketing, Education and Outreach

1.4.1. Provide a summary of the geographic segmentation strategy employed, (i.e., tools and analysis used to segment "neighborhoods," how neighborhoods are segmented and how this information is communicated to the contractor/CBO).

For its Marketing, Education and Outreach (ME&O) initiatives, PG&E used the joint utility methodology adopted by the California Public Utilities Commission (CPUC) in D.01-03-028 to develop eligibility estimates by geographic area. This method entails an annual estimation of eligibility for CARE, ESA and other income-by-household size parameters at the small area (block group, census tract, ZIP+2, etc.) for each IOU territory and for the state. The joint utility methodology is further described in CARE Section 2.1.2.

Using the 2019 geographic area list of ESA-eligible customers, PG&E broke out ZIP+2 areas eligible for "self-certification" enrollment.[10]

PG&E provides the ZIP+2 geographic area lists to ESA program contractors for targeted program enrollment. Most ESA contractors scheduled their appointments geographically and worked through their assigned areas geographically to minimize costs.

1.4.2. Provide a summary of the customer segmentation strategies employed (i.e., tools and analysis used to identify customers based on energy usage, energy burden and energy insecurity) and how these customer segments are targeted in program outreach.

PG&E's ESA program uses a propensity model to identify and target customers who are most likely to benefit from the program and have their home treated. The model leverages customer attributes and behaviors, including location, language preference, education, energy usage trends, bill amount, and payment patterns. The model creates a ranking of customers according to their likelihood, or propensity, to participate in the ESA program. The model divides the customer into ten groups or deciles. Decile 1 is the most likely to participate in ESA, decile 10 being the least likely. Each decile divides customers into a grouping of 10% of the eligible population (according to their ranking). PG&E's CARE propensity model score is also included in the ESA propensity model as, historically, engagement with other PG&E programs leads to additional customer engagement. As of December 2019, 70% of all ESA treatments were completed by deciles 1 and 2 of the current ESA propensity model. Deciles 1 and 2 deliver 50% more total ESA treatments than if customers were selected at random.

2019 ESA Marketing and Outreach Highlights
PG&E continued to use various marketing tactics that have proven successful in driving high awareness and acquisition in the ESA program. Specifically, PG&E 1) refined messages and outreach tactics to reach more likely eligible ESA participants; 2) focused on using customers' preferred channels to engage them with relevant messages; and 3) employed a multi-touch, multi-channel approach to reach CARE-enrolled customers who

[10] Over 80% of households living at or below 200% of the FPG Level.

had not yet participated in the ESA program. PG&E M&O initiatives generated 93,345 qualified leads for its ESA contractors in 2019. These activities are explained in greater detail in the following section of the report.

Direct Outreach

PG&E deployed four direct marketing campaigns utilizing direct mail and email to CARE-enrolled, ESA-eligible customers in 2019. Direct mail generated an average application submission response rate of 13%, with a program high of 19% in the first quarter (Q1) of 2019. Email also proved to be a successful channel. Click-through rates increased by .5% to 4%, and unique open rates increased by more than 1.5% to 24.7%.

PG&E continued to provide ESA program marketing collateral in bilingual versions (English/Spanish), with personalized pre-filled response application forms. Those customers who used the pre-filled response application form were more likely to participate in the ESA program.

Examples of PG&E's direct marketing materials are shown in the figures below.

Figure 1.4.2.1 – Examples of PG&E's 2019 Direct Mail

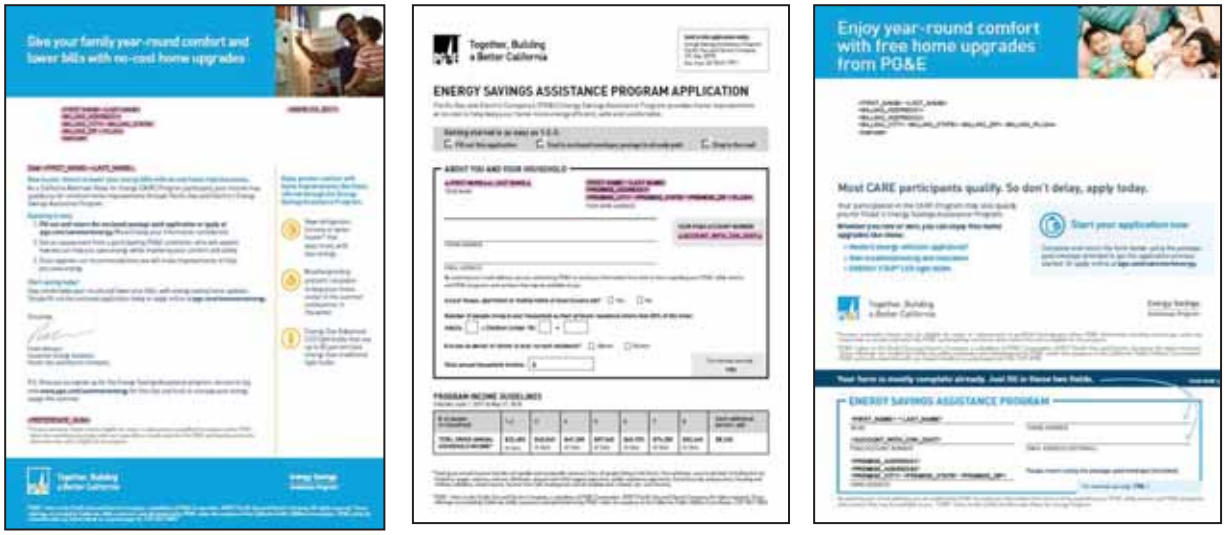

Figure 1.4.2.2 – Example of Email Creative to Promote ESA Participation

Digital Media
PG&E deployed an "always-on" digital media campaign in January 2019 that ran through December 2019. The strategy included search engine marketing, digital display advertising, and social media ad placements. The campaign started with search and digital display was added in Q2. With search and display in market together, PG&E saw a steady increase in site traffic and online application submissions to the ESA program. Online application submissions increased 11% over 2018 submissions.

Examples of PG&E's digital media are shown in the figures below.

Figure 1.4.2.3 – 2019 Digital Media Examples

Energy Statement Inserts
PG&E sent energy statement inserts to CARE-enrolled customers twice in 2019 to maintain high awareness of the ESA program among eligible customers and to generate leads for ESA contractors. The insert was bilingual with English on one side and Spanish on the other, updated from earlier versions to reflect a more inclusive representation of the income qualified population.

Examples of PG&E's energy statement inserts are shown in the figures below.

Figure 1.4.2.4 – Energy Statements Inserts

PG&E Earned Media and Owned Assets
PG&E continued to deploy an income qualified digital newsletter to approximately 1.3 million customers per month. Information about the ESA program was featured in the March and August issues. Content focused on the needs of low income renters and homeowners with medium to high-energy bills with the purpose of building awareness, driving enrollment and providing relevant energy management tips and tools.

PG&E used its Home Energy Report (HER) to promote the ESA program. PG&E also periodically featured the ESA program on the www.pge.com homepage to increase program awareness.

PG&E participated in media interviews throughout the territory to promote the ESA program with a focus on Spanish and Chinese in-language media including:

- **KLOQ Radio Lobo 98.7 FM and KGAM Magia 106.3 FM** – Community segments that targeted adult men ages18-49 and adult women ages 25-54, with coverage in Merced and Stanislaus counties.

- **Radio Bilingue** – Coverage in Fresno, Modesto, Stockton, Bakersfield, Calexico, El Centro, Mendocino and Paso Robles with high-impact educational radio campaigns. Reached approximately 250,000 unique listeners per week in California.

- **KGRB Radio** – Coverage in the Sacramento area that targeted Hispanic adults ages 18-65.

- **KFTV Univision** – Despierta Valle Central, "Wake up Central Valley", is a daily morning show that airs Monday through Friday from 5-7 am and has been on air for 25 years. The show reaches an average of 18,000 viewers per week, ages 18+, in the Fresno-Visalia designated market area.

- **KTFF Unimas 61** – Pre-recorded 15-minute TV interview. KTFF Unimas 61 targets Hispanic and Bilingual adults ages 18-54 with coverage in Merced, Madera, Fresno, Kings and Tulare counties.

- **KVMX** – Pre-recorded 30-minute interview and three 5-minute segments. The interview and segments aired on six network stations in Modesto, Merced, Sacramento, and Monterey.

- **KZSF Radio –** Station has continuously broadcasted for the past fifteen years – one of the longest for a Spanish language radio station in the Bay Area. Programming is made up of local shows and local talents with strong ties to the Hispanic community. Coverage in Santa Clara, San Mateo, Alameda and Contra Costa counties that targets adults ages 25-60.

- **KIQI 1010 AM –** Services Central and Northern California's fast-growing Latino community. Coverage in Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, San Mateo, Santa Clara, San Francisco, Sacramento and Fresno counties.

- **KVVN –** Vietnamese language format that serves the San Francisco Bay Area with a specific focus on the Santa Clara Valley. Pre-recorded 10-minute segment interviews were aired at various times throughout the day. Targeted adults ages 30-60.

Community Events
PG&E attended various community events such as health fairs, community resource fairs, senior resource fairs, county fairs, farmers markets and other events to promote the ESA program. ESA contractors joined PG&E at many of these to offer in-person application assistance. ESA contractors also attended bimonthly Customer Assistance Days at local PG&E Customer Service Offices (CSOs) where they promoted the program to eligible customers.

1.4.3. Describe how the current program delivery strategy differs from previous years, specifically relating to Identification, Outreach, Enrollment, Assessment, energy Audit/Measure Installation, and Inspections.

Identification
In 2019, PG&E continued to prioritize M&O to CARE-enrolled customers with certain attributes such as new program participants, a high-energy user, or completing the post-enrollment verification (PEV) process. Customers were highly engaged with the company during these shifts in status and were more likely to take advantage of ESA program benefits. In 2019, PG&E continued to focus on these audiences to generate leads.

Outreach
In 2019, PG&E continued to leverage the success of the simplified direct mail letter and application. A 2018 campaign analysis showed that submissions from the simplified letter/application led to more homes treated; this version made up 80% of each campaign mailing. With only five questions, three were pre-filled with customer info, the remaining two asked for current email address and phone number. This shorter application is simpler and more convenient for busy customers.

Enrollment
PG&E made no changes to the ESA program enrollment process from the previous year.

Assessment
PG&E made no changes to the ESA program assessment process from the previous year.

Energy Audit/Measure Installation
In 2019, PG&E added the following measures: water heater and central heat pump replacements, high efficiency furnaces, smart thermostats, and blower motor retrofits. PG&E retired microwave replacements.

Inspections - Minor Fail Initiative
PG&E implemented the "Minor Fail Initiative" to reduce ESA contractor return visits to a customer's home as a result of one of these measures failing inspection. The purpose of the initiative was to determine the success of PG&E's inspection team in correcting these specific minor fails. The minor fail initiative included only those measures that require relatively little effort to install. These measures include cover plates, gaskets, and Light-Emitting Diode (LED) A-lamps. For PG&E's inspection team to correct minor fails, the inspector must verify no other fails are present at the customer's home before implementing the minor fail procedure. PG&E launched program-wide implementation the Q1 of 2019. In September 2019, PG&E reviewed the data and found only a small number of customers received the measures included in the initiative. As such, the pilot was discontinued.

1.4.4. Track Costs of Assembly Bill (AB) 793 related Energy Management Technologies programs (identify all of the programs or initiatives that will be able to benefit from the availability of the end-use and electric usage profiles, and to coordinate with the relevant proceedings so that the relevant costs can be considered in those proceedings' cost-effectiveness decision-making), including costs for Energy Education.

PG&E offers its income qualified customers several energy management technology-related programs and tools to help them better manage their energy use.

Enhanced Energy Education
PG&E focused its enhanced energy education on helping income qualified customers know where and how to locate online tools available to assist in understanding and managing their energy bills. ESA contractors are required to assist customers in enrolling for Your Account (formerly My Account)[11], PG&E's online portal to receive energy

[11] In 2019, PG&E renamed My Account to Your Account.

statements, energy alerts and the like should the customer opt-in. ESA contractors also review the customer's energy usage, and highlight rate options, and payment options and assistance. Home education costs totaled $6,872,798 in 2019.

Smart Thermostats
Launched in November 2019, PG&E installed 505 smart thermostats. PG&E, along with the other IOUs, studied the impacts of installing smart thermostats and the energy savings impacts of these installations. More details on that study can be found in Section 1.12.

Load Disaggregation Reports
PG&E continued work on the load disaggregation report project in 2019. The load disaggregation reports used PG&E's electric smart meter data to disaggregate income qualified customers' energy usage and provided them with tips to reduce their usage in the winter and summer seasons. ESA contractors will also be able to use these reports as part of their in-home education activities.

Home Energy Reports (HERs)
PG&E uses its HERs to promote ESA and other income qualified programs for applicable audiences. In 2019, 1.8 million PG&E customers received HERs. Of them, nearly 500,000 are low income customers enrolled in the CARE program.

Building Benchmarking Portal
PG&E encourages its income qualified MF property owners to benchmark their properties using PG&E's building benchmarking portal, which uses PG&E's smart meter data to provide building owners and managers insights into how to save energy and reduce their operating costs.

1.5. ESA Program Customer Enrollment

1.5.1. Distinguish between customers treated as "retreated or go backs" and "first touch" customers so that the Commission has a clear idea of how many new customers the IOUs are adding to the ESA program.

In 2019, PG&E treated 64,183 "Go-Back" customers and 42,490 "First Touch" customers, or customers participating in the program for the first time.[12] These treatments represented 60% and 40%, respectively, of the total annual homes treated of 106,673.

[12] In D.16-11-022, the Commission removed restrictions against re-treating customers treated after 2002. These "Go-Back" customers had previously been ineligible to participate in the ESA program because of the prior participation in the program and became eligible again in 2017.

1.5.2. Please summarize new efforts to streamline customer enrollment strategies, including efforts to incorporate categorical eligibility and self-certification.

In 2019, PG&E's ESA program contractors continued to streamline customer enrollment strategies by incorporating categorical eligibility and self-certification into ESA program processes, as allowed by ESA's program policy.

PG&E encouraged contractors to work in the 80% self-certification areas[13] by providing them with breakdowns of estimated eligible customers by ZIP+2 to use in their customer recruitment activities.

The CPUC expanded ESA self-certification requirements in counties impacted by the California wildfires.[14] Customers residing in the wildfire impacted counties could self-certify for ESA if they lost income documents in the fires. In addition, households in which persons displaced by the wildfires reside were also allowed to self-certify for ESA. Self-certification was further expanded to include customers where a new state of emergency proclamation is issued.[15]

The expanded ESA self-certification requirements continue to be in place for a period of one year commencing from the date the state of emergency proclamation was issued, or until PG&E service is restored.

1.5.3. If the IOU has failed to meet its annual goal of number of households served, please provide an explanation of why the goal was not met. Explain the programmatic modifications that will be implemented in order to accomplish future annual goals of number of households served.

In 2019, PG&E exceeded its annual goal of households served. PG&E treated 106,673 customer homes, reaching 107% of the annual target.[16]

1.6. Disability Enrollment Efforts

1.6.1. Provide a summary of efforts to which the IOU is meeting the 15% penetration goal.

Disabled customers made up 25% of the ESA program enrollees in 2019, exceeding the 15% penetration goal.[17] Because ESA contractors may not ask about disabled inhabitants, households with disabled occupants were counted and recorded by ESA

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[13] Customers living in ZIP codes having 80% or more households at or below the ESA-qualifying 200% of the FPG Level are allowed to self-certify their eligibility, per D.08-11-031, Ordering Paragraph (OP) 6.

[14] Resolution M-4833.

[15] D.18-08-004.

[16] Authorized in D.16-11-022 and updated in D.17-12-009.

[17] PG&E does not have disability data to determine the eligible disabled population, and so uses enrollment data as a proxy to calculate a "penetration" rate.

contractors based on visual observations, or unsolicited comments by inhabitants. Thus, participation of households with a disabled inhabitant may be higher than recorded.

1.6.2. Describe how the ESA program customer segmentation for ME&O and program delivery takes into account the needs of persons with disabilities.

PG&E's ESA program takes the needs of persons with disabilities into account by providing specialty measure enhancements to ESA customers with disabilities. For example, side-by-side and bottom mount refrigerators are available to customers with disabilities. In 2019, ESA installed 698 of these special-order refrigerators.

PG&E produces ESA program materials to help customers who are blind or have low vision, and provides alternate customer formats upon request. A large print ESA fact sheet is available on PG&E's website or customers can call or email PG&E, and we will provide the fact sheet in Braille or large print. These printed copies are provided to the ESA contractors. Braille and large print versions of the ESA fact sheet are available to the ESA contractors as well as the community outreach partners to provide to customers.

1.6.3. Identify the various resources the IOUs utilize to target the disabled community and the enrollments as a result.

Table 1.6.3 – Disability Enrollments

2019 Disability Enrollments			
Source	**Total Enrollments**	**Disability Enrollments**	**% of Disability Enrollment**
Various contractor recruiting and sign-ups			
Total Enrollment Rate	**106,673**	**26,960**	**25%**

PG&E's outreach strategy includes collaboration with strategic community partners to provide energy education as well as facilitate enrollment in the ESA program. PG&E also uses Community Outreach Contractors (COCs) to help drive participation in its income qualified programs. Traditional marketing channels like print materials, one-on-one direct interaction at local community outreach events such as senior resource fairs and health resource fairs, and PG&E lobby assistance days are effective at targeting the disabled community.

1.6.4. If participation from the disabled community is below the 15% goal, provide an explanation why.

In 2019, disabled community participation within PG&E's ESA program was 25%.

1.7. Leveraging Success, Including Low Income Home Energy Assistance Program (LIHEAP)

ESA program contractors referred approximately 560 customers to LIHEAP in 2019.[18] PG&E estimated savings from its refrigerator leveraging contracts with LIHEAP providers (see Section 1.7.3) and its water agency initiative (see Section 1.7.4). More details on PG&E's leveraging efforts are detailed below. Specific results of 2019 leveraging activities are shown in ESA Table 14.

1.7.1. Describe the efforts taken to reach out and coordinate the ESA program with other related low income programs offered outside the IOU that serve low income customers.

In 2019, PG&E coordinated with Redding Electric Utility's (REU) weatherization program for income qualified customers. PG&E leveraged 708 REU homes. The collaborative program offered natural gas and electricity saving measures to customers served by both PG&E and REU. Income qualified Redding natural gas customers that participated in PG&E's ESA program were automatically enrolled in REU's program and received all feasible electric measures in addition to the gas measures provided by ESA. The joint program leveraged training, processes, and customer touches to minimize program implementer costs and resources, while providing maximum benefit to customers.

1.7.2. In addition to tracking and reporting whether each leveraging effort meets the above criteria in order to measure the level of success, please describe the Other Benefits resulting from this particular partnership not captured under the 3 criteria described above.

PG&E has not tracked other benefits outside of those captured under the three criteria described above.

1.7.3. Please provide a status of the leveraging effort with CSD. What new steps or programs have been implemented for this program year? What was the result in terms of new enrollments?

LIHEAP Refrigerator Leveraging
PG&E implemented its refrigerator leveraging program with LIHEAP providers. Through this leveraging program, LIHEAP agencies in PG&E's service area that are not ESA contractors can receive ESA program funding to purchase refrigerators for qualified PG&E electric customers, thus freeing up more LIHEAP funding to provide other services to low income households. PG&E counts these refrigerators and their savings but does not count these as ESA treated homes. In 2019, only 29 ESA refrigerators ($23,200 in funding) were funded through LIHEAP leveraging contracts, resulting in savings of 19,005 kWh and 2.5 kW. In 2019, PG&E worked with three interested LIHEAP agencies to ensure they were properly trained on the ESA program, which should allow these LIHEAP agencies to increase the number of installations moving forward.

[18] Self-reported from implementation contractors.

LIWP MF Whole Building Coordination[19]
Due to the difference in income verification requirements between the ESA program and the LIWP MF Whole Building program, it remained a challenge for CSD to incorporate ESA measures in LIWP projects. As a result, LIWP did not submit any reimbursements to PG&E for ESA funds in 2019.

1.7.4. Describe the coordination efforts with water agencies or companies (wholesalers or retailers).

PG&E continued leveraging its relationship with the three water agencies that joined PG&E's Water-Energy Coordination program in 2018. These agencies include California American Water in Monterey, Sacramento, and Santa Rosa, Solano County Water Agency, and Yuba Water Agency. In 2019, PG&E expanded the program to include four new water agencies - East Bay Municipal Utility District, Alameda County Water District, City of Santa Cruz, and Santa Clara Valley Water. Further, California American Water expanded leveraging to include Merced district.

In 2019, 2,600 homes were served by the program. Through the program, ESA contractors evaluated toilets using toilet dye tabs, replaced eligible toilets, conducted outdoor assessments, examined meters, performed leak detection and water conservation education. Customers also received conservation giveaway items such as hose nozzles and shower timers, and literature about additional water conservation opportunities. Installation of these measures saved customers an estimated 14.2 million gallons of water and 15,700 kWh per year.

PG&E continued outreach to water agencies to encourage more program participation. In May 2019, PG&E hosted a Water-Energy Forum to discuss water-energy partnership opportunities and assess interest of water agencies to collaborate with PG&E to enhance their water conservation efforts for low-income customers.

1.7.5. Describe the outreach and coordination efforts with Tribal Communities.

On January 4, 2019, PG&E's Tribal Consultation Plan was approved as proposed in the July 16, 2018 filing of the Mid-Cycle Advice Letter (AL) 3990-G/5329-E pursuant to D.16-11-022. The Plan included a prioritization and focus on 11 tribes based on the highest poverty and lowest penetration levels. PG&E contacted all 11 tribes, held in-person meetings with seven, and provided information to three. PG&E had no response from one. In total, 23 tribes have interacted with PG&E Customer Service Representatives (CSRs) and been informed of the low income assistance programs, including CARE, Family Electric Rate Assistance (FERA), ESA, and Relief for Energy Assistance through Community Help (REACH), along with other helpful programs and tools such as Medical Baseline, Budget Billing, Energy Alerts and Electric Rate Plan Comparison.

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19 D.16-11-022 required PG&E to fund ESA measures currently offered by ESA for multifamily customer households participating in CSD's Low Income Weatherization program (LIWP) for multifamily buildings.

Table 1.7.5 – Tribal Outreach Status

	In Person	No Response or Materials Only	Non-FR
Berry Creek Rancheria of the Tyme-Maiou Tribe	x NC		
Big Sandy Rancheria of Western Mono Indians of California	x SF		
Cahto Indians of the Laytonville Rancheria	x		
Chicken Ranch Rancheria of Me-Wuk Indians of California		No Response	
Cold Springs Rancheria of Mono Indians	x SF		
Dunlap Band of Mono	x SF		x
Grindstone Rancheria of Wintun-Wailaki Indians		Materials	
Guidiville Rancheria of California	x NC		
Habematolel Pomo of Upper Lake	x		
Hoopa Valley Tribe	x		
Hopland Band of Pomo Indians	x		
Manchester Band of Pomo Indians	x NC		
Mooretown Rancheria of Maidu Indians	x NC		
North Fork Mono	x SF		x
North Fork Rancheria of Mono Indians	x SF		
Pinoleville Pomo Nation		Materials	
Redwood Valley Rancheria of Pomo Indians	x		
Robinson Rancheria of Pomo Indians		Materials	
Round Valley Indian Tribe	x		
Sherwood Valley Rancheria of Pomo Indians	x		
Tuolumne Me-Wuk Tribe	x		
United Auburn Indian Community/Auburn Rancheria	x		
Yurok Tribe	x		

Table 1.7.5 blue lines represent the eleven priority tribes. The “SF” designation represents the Sierra National Forest Tribal Forum held in North Fork with tribal leaders on February 20, 2019. The “NC” designation represents the Northern Circle Indian Housing Authority meeting in March 2019. This tribal government agency was established to access, construct and manage housing for seven different tribes. Through this agency, PG&E reached important and credible tribal members and influencers who could help publicize the income qualified programs. This agency also shared insights into current housing conditions and various plans for improvements on tribal lands. “Non-FR” indicates non-federally recognized tribes.

PG&E completed several outreach events with tribal leaders. In May, PG&E attended the Earth Day Event with the Cahto Tribe in Laytonville. During this event, ten households signed up for a home assessment with the ESA contractor. However, none of the households followed through with income documentation or appointment scheduling.

PG&E completed the focused project work with the Yurok Tribe in October 2019, which included a strong partnership with tribal leadership, customized outreach and in-depth home assessments. The goal of this work was to gain insights into the barriers to ESA participation. PG&E plans to share key findings, lessons-learned and recommendations with the CPUC following finalization of the report from Richard Heath & Associates (RHA), who was the project facilitator. The report was completed in Q1 2020.

The data in the report showed the ESA contractor had conducted 285 outreach touches, including phone calls and letters. There were 22 home assessments scheduled and the contractor completed 12. There were seven customers who canceled their appointment before the contractor arrived – one was canceled due to insufficient directions, and two had scheduling issues which led to them declining altogether. For the customers who did participate, the list of eligible measures was somewhat reduced due to their use of

alternate fuel sources such as propane and wood. The most common measure installed was LED lighting.

Overall, the 2019 penetration rate for homes treated reached 57% for the estimated number of ESA-eligible customers living on tribal lands in PG&E's service area.[20]

1.8. Integration Success

In 2019, PG&E continued distribution of the redesigned customer-assistance-focused "Integrated Services Brochure" in multiple languages. This brochure offers enrollment information for the following programs, in addition to ESA:

- CARE
- FERA
- REACH
- Balanced Payment Program
- Payment Arrangements
- Bill Guaranty
- Third-Party Notification (past due reminders)
- www.pge.com/youraccount
- Cooling Centers
- Medical Baseline
- Rate Choices

PG&E distributed additional customer brochures to help customers save money and better manage their energy bills. This included information on tired rate plans, Time-of-Use (TOU) rate plans, and the Electric Rate Plan Comparison tool to help customers get a personalized rate plan recommendation. PG&E employed Bill Forecast Alerts as well as Home Energy Checkup tools to help customers understand where they can find the biggest savings in their home.

1.8.1. Describe the new efforts in program year to integrate and coordinate the ESA program with the CARE program.

In 2019, PG&E continued efforts to integrate ESA messaging into CARE outreach and offer ESA services to high-energy users on CARE. PG&E sent a bilingual English/Spanish CARE Welcome Kit via direct mail or email to newly enrolled CARE customers. This tactic continues to be successful and generated close to 8,000 ESA applications.

As discussed in Section 1.4.2, CARE-enrolled customers within six identified priority categories received PG&E direct marketing outreach and were targeted by ESA contractors in their outreach efforts. ESA contractors and CARE COCs continued to cross-promote ESA and CARE programs at outreach events.

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20 The estimated eligible number comes from census data provided annually by Athens for updated IOU CARE eligibility estimates.

1.8.2. Describe the new efforts in program year to integrate and coordinate the ESA program with the EE Residential program.

PG&E's ESA program collaborated with the EE Residential programs extensively throughout 2019. Some successful examples include the MF Single Point of Contact (SPOC) and the Residential Energy Advisor program.

Multifamily SPOC
PG&E launched its SPOC service in 2017 as a resource for MF customers to learn about program opportunities applicable to MF properties. In 2019, PG&E SPOC expanded services and website tracking to increase SPOC's presence as a resource for the MF market. The enhanced website tracking capabilities demonstrate the common pathways customers follow to investigate opportunities. The website receives more visitors than any other inbound inquiry resources including the SPOC hotline and email. In addition, the SPOC conducted targeted outreach including attending 15 community events and partnered with local governments to host PG&E program workshops targeted at MF financers, owners, developers, management companies.

Table 1.8.2.1 summarizes the 2019 hotline calls and call referrals. Calls received may result in multiple referrals.

Table 1.8.2.1 – Calls Received and Call Referrals

	Count	2019 Increase from 2018 (%)
SPOC Calls	142	51
SPOC MF Program Referrals	183	31

In 2019, SPOC referred an estimated 9,492 MF dwelling units[21] to nine programs. Table 1.8.2.2 provides the SPOC program-specific referral data for 2019 (inbound inquiries via hotline calls and email), which includes PG&E programs and Bay Regional Energy Network (BayREN), Bay Area Multifamily Building Enhancements (BAMBE), and CSD LIWP.[22] While SPOC is a MF resource, the program received inquiries from customers with less than five units and single family dwellings. PG&E SPOC routes single family customers to ESA In-Unit or the Moderate Income Direct Install (MIDI) or the BayREN single family home program (BayREN Home+), based on eligibility and ownership structure (renter versus owner).

[21] Five or more dwelling units.

[22] PG&E does not administer BayREN, BAMBE, or CSD LIWP.

Table 1.8.2.2 – SPOC Program Referrals

Program	Customers	Buildings	Dwelling Units
ESA: In-Unit (ESA In-Unit)	15	3	68
ESA Common Area Measures (CAM)	43	156	2,780
MIDI	18	N/A [a]	49
California Solar Initiative (CSI) Thermal	-	-	-
On-Bill Financing	9	54	843
PG&E Cooling Optimizer	-	-	-
BayREN BAMBE	56	129	3,541
EV Charge Network	4	4	267
MUP	36	92	1,944
LIWP	1	N/A	N/A
California Multifamily New Homes (CMFNH)	1	N/A	N/A
Self-Generation Incentive Program (SGIP)	-	-	-
Single Family (No referral available)	18	7	32
BayREN Home Program	19	N/A	45
TOTALS	**9,537 Multifamily Dwelling Units 32 Single Family Dwelling Units**		

[a] "N/A" in Table 1.8.2.2 indicates information that was unavailable as a result of resident referrals or callers who either did not have or were unable to provide building and unit data (for example, new construction projects early in the planning phase).

PG&E SPOC tracks the number of link clicks on the SPOC webpage (www.pgemultifamily.com), and how many visitors are navigating to one of the program websites from the SPOC landing page. In 2019, 2,090 unique visitors viewed the SPOC website for a total of 2,725 views (indicating repeat visitors). Table 1.8.2.3 summarizes click data from the SPOC landing page to PG&E's homepage and 12 energy program websites.

Table 1.8.2.3 – Click Data

Energy Program Website	# of Clicks
www.pge.com	543
ESA	299
ESA CAM	278
MIDI	212
CSI Thermal Initiative	85
OBF	75
Cooling Optimizer	45
BAMBE	58
EV Charge Network	49
MUP	192
CSD LIWP	119
CMFNH	30
SGIP	7
TOTAL	**2,094**

EE Multifamily Upgrade Program

During program design phase, PG&E CAM relied on the PG&E MUP for program design guidance, including using an open contractor network and phased payment policies for incentive payments. PG&E CAM also leveraged existing partner relationships from PG&E MUP for potential PG&E CAM leads. Upon PG&E CAM launch in 2019, PG&E's implementer reviewed the MUP pipeline and potential leads to identify projects eligible for PG&E CAM. The MUP and CAM implementation teams worked closely to transfer projects to PG&E CAM or layer the two programs if the projects could meet the eligibility requirements for both programs. There are currently three active PG&E CAM projects also leveraging MUP funds, supporting comprehensive whole building projects.

PG&E SPOC provided technical assistance to layer PG&E MUP with a project that was already receiving ESA CAM and CSD LIWP funds. By incorporating MUP funding, the owner was able to complete their entire scope of work without reducing measures due to lack of funding. Additionally, by layering these three energy programs, the project team provided the property and the residents with energy upgrades in common areas, to central systems, and in the units, whereas previously this would not have been possible due to constrained budgets.

EE Residential Energy Advisor

- **Your Account:** In 2019, Your Account provided more comprehensive self-service tools to all PG&E customers including ESA customers who are enrolled in Your Account. Key enhancements such as bill journeys providing energy usage details and comparisons, Home Energy Checkups including bill disaggregation, and personalized tips continued to help income qualified customers reduce their energy usage. Your Account continued to offer rate comparisons and a Bill Forecast Alert in 2019. In 2019, 9,426 ESA customers enrolled in Your Account and 7,243 enrolled for My Alerts.

- **Residential Newsletter:** As part of the Residential Integrated Campaign, the Residential Newsletter was distributed monthly to over 2.8 million residential customers, with approximately 1.3 million receiving a digital version tailored to income qualified customers with medium to high-energy bills. PG&E's goal is to go beyond a transactional one-time interaction with its customers in exchange for a continued

dialogue about energy management.

- **HERs:** PG&E used its HERs to promote ESA and other income qualified programs for applicable audiences. 1.8 million customers received HERs. Of them, nearly 500,000 were low income customers enrolled in the CARE program.

1.8.3. Describe the new efforts in program year to integrate and coordinate the ESA program with the Energy Efficiency Government Partnerships Program.

In 2019, PG&E's SPOC coordinated with several of PG&E's local government partnerships, as well as with state and federal agencies. For example, the SPOC worked with Sustainable Silicon Valley to finalize a comprehensive matrix of programs and eligibility criteria that are available to MF landlords in Santa Clara County. PG&E SPOC hosted two workshops with the City of Fremont to engage MF stakeholders with program information. One workshop focused on new construction programs and the other focused on retrofit programs. PG&E's SPOC maintains an active relationship with California Alternative Energy and Advanced Transportation Financing Authority (CAEAFTA) to exchange potentials leads with their green financing program, California Hub for Energy Efficiency Financing (CHEEF).

PG&E SPOC also presented during a United States Department of Agriculture (USDA) affordable housing managers meeting about programs available in PG&E territory.

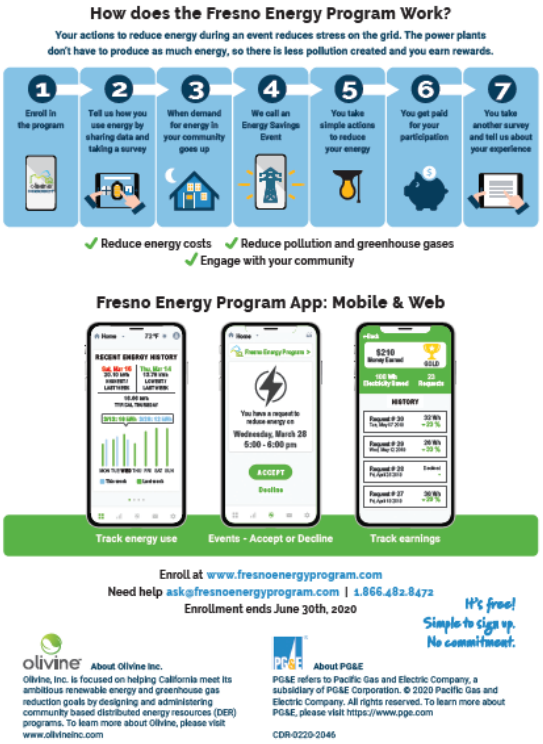
1.8.4. Describe the new efforts in program year to integrate and coordinate the ESA program with any additional EE programs.

PG&E's MIDI/Custom Home Energy Solutions (CHES) program was retired at the end of 2019. PG&E's EE team remains committed to serving moderate income and hard to reach customers and is currently evaluating new program proposals for this customer base through the local and statewide third-party program solicitations process.

1.8.5. Describe the new efforts in program year to integrate and coordinate the ESA program with the DR programs, including successes in Air Conditioning Cycling or other DR programs.

PG&E's air conditioning cycling program, SmartAC, has historically been offered to ESA program participants as an annual outreach effort and has provided about 1,500 new enrollments annually. However, with a shift in focus to third-party demand response (DR), PG&E has modified its promotion of DR through the ESA program to speak more broadly about DR programs that are offered by both PG&E and third parties. As part of this, PG&E developed new marketing material, shown below, for ESA contractors to provide to ESA program participants. The material introduces basic DR approaches such as using smart thermostats, and load shifting benefits. The material provides a weblink which directs customers to a lists of DR providers as a resource for DR opportunities.

Figure 1.8.5 – Energy Statements Inserts



1.8.6. Describe the new efforts in program year to integrate and coordinate the ESA program with the CSI programs.

Single Family Affordable Solar Homes (SASH) Program
PG&E's ESA program works with GRID Alternatives to deliver ESA services to customers that have been approved to participate in the SASH program. On a regular basis, GRID Alternatives provides PG&E's ESA program with a list of SASH eligible homes, prior to installing solar units. PG&E checks to see if any of these customers have participated in the ESA program, and then notifies GRID Alternatives of the measures that were installed in the home. GRID Alternatives uses this data in their calculations to accurately size the SASH solar unit to be installed. In 2019, the ESA program treated 122 homes that were selected for SASH program participation. PG&E also supplied ESA measure installation data for SASH selected homes that were treated through the ESA program in prior years.

1.8.7. Provide the number of referrals to the Single Family Affordable Solar Homes (SASH) Program Administrator.

In 2019, PG&E provided 491 referrals to the SASH Program Administrator, GRID Alternatives.

1.9. Workforce Education and Training

1.9.1. Please summarize efforts to improve and expand ESA program workforce education and training (WE&T). Describe steps taken to hire and train low income workers and how such efforts differ from prior program years.

In 2019, PG&E had over 30 unique ESA contractors, with approximately 844 staff implementing the program in the field. PG&E's ESA contractors hire locally. These ESA program contractors bring their local, in language knowledge to help recruit participants from the communities in which they live and work. PG&E's training in safety, ESA home assessment, energy education, customer service, weatherization services and measure installation, provides workers with skills and work experience that are transferable to other DSM and clean energy jobs.

1.9.2. Please list the different types of training conducted and the various recruitment efforts employed to train and hire from the low-income energy efficiency workforce.

ESA Training

PG&E's Energy Training Center (ETC) has supported training for the ESA program for over 35 years. Through the ETC, PG&E's Workforce Education and Training program provides training to ESA contractors, including Weatherization Specialists (installation crews), Energy Specialists (assessors/educators), and any others interested in PG&E's ESA program. In 2019, the ETC trained over 580 individual contractor staff to work as Energy Specialists, Weatherization Specialists, Duct Test and Seal technicians, and NGAT technicians[23] for the ESA program. In 2019, the ETC provided over 2,400 classroom days of training. Each of the students that attended sessions at the ETC were hired by a participating contractor prior to attending, except for one cohort of six Stockton-area high school students from the Merlo Institute of Environmental Technology. These students audited the Energy Specialist course to gain insight into EE careers.

ESA contractor training conducted at the ETC is shown in the following table:

Table 1.9.2 – ESA Program Training

Type of ESA Training Conducted	Length of Training	2019 Employees trained	Student Days
ESA Program Onboarding	1 day	401	401
Energy Specialist (ES) Certification Training	4 day	174	696
Energy Specialist on Demand	Self-Paced	191	N/A[24]
Weatherization Specialist (WS) Training	2 day	181	362
Advanced Weatherization Specialist Training	2 day	183	366
NGAT Training[25]	4 day	122	488
Duct Testing & Sealing	1 day	106	106
ESA Smart Thermostat Training (Mid-Cycle Measures Train-the-Trainer)	1 day	29	29
ESA New Measure Training for R&R Contractors (Mid-Cycle Measures Train-the-Trainer)	1 day	34	34

[23] NGAT training costs are recorded to PG&E's 2017 General Rate Case (GRC) Decision (D.)17-05-013.

[24] Energy Specialist On Demand is a web-based, self-paced prerequisite training for the in-person Energy Specialist training. Training is not measured in student days as with in-person training. The 191 completions in 2019 totaled 1,956 total hours of self-paced instruction.

[25] NGAT training costs are recorded to PG&E's 2017 GRC D.17-05-013.

Throughout 2019, PG&E's ETC and ESA programs worked together to revise the delivery methods of existing curriculum. Common lessons related to customer engagement, safety and program policies and procedures previously taught across multiple classes were consolidated into an onboarding class. Taught as a one-day overview, the foundational lessons were delivered to contractors early in their training journey, reserving more advanced concepts for role-specific training. Introductory in nature, the onboarding subject-matter could also be taught as web-based training modules. PG&E plans to pilot the web-based training in 2020. Web-based training can reduce ongoing costs of instruction and contractor travel and allow subject-matter to remain available on an on-demand basis.

PG&E evaluated the delivery of training to experienced contractors. An analysis of job skills required across ESA and other California weatherization programs identified common job skills and training curriculum. PG&E prepared a "delta" training program, building on experienced contractors' existing knowledge-base and delivering the new and advanced concepts unique to the ESA program. The delta program, scheduled to pilot in 2020, will evaluate existing contractors' experience through pre-training assessments, allowing those with demonstrable experience to advance through training in roughly 50% of the time for new contractors.

Recruiting Efforts
ESA contractors typically recruited and hired field personnel within their respective local communities, helping provide greater program awareness and acceptance within the communities served by the ESA contractor. Some of the techniques used by ESA program contractors to recruit field personnel employees included, but were not limited to:

- Posting on CalJOBS website, veterans and workforce development boards locally for a minimum of two weeks prior to general public posting
- Advertising listings in local newspapers and technical colleges
- Placing ads on Craigslist, Indeed job board and other similar online sites
- Distributing job postings through a network of CBOs and entities serving low income communities regionally
- Posting on company social media outlets to include company website, LinkedIn, Facebook
- Recruiting ESA program participants who express an interest in being an Energy or Weatherization Specialist
- Using word of mouth within their respective communities

1.10. Legislative Lighting Requirements Status

1.10.1. Provide a summary on current and future compact fluorescent lamp (CFL) supply issues, as experienced by the IOU. Any current/future problems as well as potential solutions should be discussed in this paragraph.

PG&E did not install CFLs in 2019. CFLs were phased out in 2017 as ESA transitioned to LEDs per D.16-11-022.

1.10.2. Provide a summary explaining how IOU promotes the recycling/ collection rules for CFLs.

CFLs are no longer being installed under PG&E's ESA program. However, PG&E provides CFL handling and recycling information to ESA program participants in the Statewide Energy Education Booklet handed to the customers at the time of home assessment and energy education.

1.10.3. Complete Table 15 (in Appendix B). In addition, please briefly summarize the CFL procurement process for the IOU, including manufacturers, distributors, warehousing, and contractor delivery.

PG&E did not install CFLs in 2019. CFLs were phased out in 2017 as ESA transitioned to LEDs per D.16-11-022.

1.11. Studies

1.11.1. For each Study, provide (1) a summary describing the activities undertaken in the study since its inception; (2) the study progress, problems encountered, ideas on solutions; and (3) the activities anticipated in the next quarter and the next year.

PG&E continued work on three statewide studies, and three PG&E-specific studies, as listed in more detail in Table 1.11.1, which provides an overview of the ESA Studies that PG&E and/or the IOUs completed in 2019.

Table 1.11.1 – ESA Studies

Study	Lead Consultant	Contracting IOU	Project Initiation	Project Completion	Statewide Budget	PG&E Budget[26]
2019 Statewide Low Income Needs Assessment (LINA)	Research Into Action	Southern California Edison (SCE)	Feb 2018	Dec 2019	$500,000	$150,000
PY 2015 Statewide ESA Impact Evaluation	DNV GL	Southern California Gas Company (SoCalGas)	Jan 2017	Apr 2019	$550,000	$165,000
Statewide Non-Energy Benefits (NEBs) Study	Skumatz Economic Research Associates, Inc. (SERA)	San Diego Gas and Electric (SDG&E)	Aug 2018	Aug 2019	$150,000	$45,000
Rapid Feedback Research & Analysis[27]		PG&E			N/A	$200,000
Total 2017-2020 Budget					**$1,200,000**	**$560,000**
2019 PG&E Rapid Feedback Project - 1	StatWizards	**PG&E**	Apr 2019	Aug 2019	**NA**	**$17,400**
2019 PG&E Rapid Feedback Project - 2	Grounded Research	**PG&E**	Jul 2019	Oct 2019	**NA**	**$22,100**

Statewide Low Income Needs Assessment (LINA) Study[28]
LINA study data collection continued into 2019. The research team completed its analysis in late 2019 and presented its findings at a public workshop in November 2019. The final report was issued in December 2019.[29]

The 2019 LINA study addressed specific topics not well understood or researched in prior LINA studies. The statewide findings and recommendations included:

1) CARE post-enrollment processes are successful at removing most ineligible participants but could improve in retaining eligible participants, particularly at the income verification stage.

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[26] This amount represents the total Joint Utility study budget, authorized in D.16-11-022. The authorized Joint Utility budget split for all studies is: PG&E–30%, SCE–30%, SCG–25%, and SDG&E–15%

[27] Rapid Feedback Research & Analysis is not a statewide study; each IOU has its own budget to propose research.

[28] The LINA Study is mandated to be completed every three years per AB 327 and PUC Sec. 382(d).

[29] Opinion Dynamics. 2019 California Low Income Needs Assessment – Volumes 1-3. December 2019. See: https://pda.energydataweb.com/#!/documents/2308/view

2) CARE ME&O is effective at achieving 90% penetration, including immigrants and non-English speakers, but could be improved to increase awareness and new enrollments.

3) ESA participants who received targeted measures perceived significant health/comfort/safety improvements and the IOUs should continue offering them.

4) Alternative fuel (alt-fuel) customers are defined as those who do not have natural gas service and reported using propane, kerosene/oil/diesel, and/or wood/pellets as their primary fuel for space heating, water heating, and/or cooking. Alt-fuels customers are uniquely burdened by the cost of alt-fuels, particularly propane users, and programs like CARE and ESA appear to help but only with electricity costs.

5) Low income customers living in low service reliability areas reported few differences from other low income customers.

PG&E plans to use findings from the LINA study to inform both CARE and ESA program implementation in the 2017-2020 PYs and beyond.

Statewide ESA Energy Savings Impact Evaluation[30]

In 2017, under the direction of the CPUC Energy Division (ED), the IOUs began a statewide impact evaluation of the 2015-2017 ESA PYs. The study, conducted by DNV GL, was completed in 2019. This evaluation used a billing analysis approach to assess ESA program impacts for the 2015-2017 PYs.

The evaluation was divided into two phases. Phase 1 used program data from 2014-2016. Phase 1 results established the modeling framework and provided results for use in the IOUs' ESA mid-cycle program update AL filings submitted in 2018. Phase 2 incorporated the first six months of 2017 program data into the model and refined the modeling approach. The Phase 2 evaluation produced results at the household level across the years evaluated but did not allocate savings at the measure level. PY 2015-2017 planning (ex-ante) savings estimates[31] were higher than the evaluated (ex-post) savings as determined in this Impact Evaluation.

PG&E noted several challenges with the study including the addition of negative savings. In one case, the impact evaluation attributed negative savings values to measures that do not draw load. For example, the study attributed negative savings values for duct repair measures that use no energy. However, other negative energy savings were more plausible. Negative energy savings may result from equipment replacement and/or repairs because customers can now use repaired or replaced equipment that they were not using before, thus generating more energy usage. While certain ESA equipment replacement/repair measures lead to increased energy usage, they may promote and produce favorable health, comfort and safety benefits for program participants, an important component of the ESA program.

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30 DNV GL. ESA Program Impact Evaluation PY 2015-2017 Phase 2, Final Results. April 26, 2019. See: https://pda.energydataweb.com/#!/documents/2173/view

31 Ex-ante savings for Program Years (PY) 2015-2017 were based on prior 2011 impact evaluation results from the 2009-2011 cycle.

Key recommendations in this report included:

- Refining program planning assumptions to fully account for potential consumption-increase assumptions for measures installed for non-energy related benefits. For example, flagging fixes to heating or cooling units where the unit was not working or not used prior to the visit would segregate off installations that increased consumption and improve overall program savings projections.
- Using standardized data fields such that information readily rolls up to program totals and matches the values reported to the CPUC and to better align program data, definitions and requirements with billing information.
- Applying other statistical methods to understand program savings in the next evaluation as the evaluation methodology produced unreliable savings at the measure level. As a result of this, PG&E worked with the other IOUs to allocate savings at the measure level as required for program reporting and planning.

For the next ESA Impact Evaluation, which is scheduled to take place during the 2021-2026 program cycle, PG&E plans to explore other protocol-compliant evaluation methods that may provide more consistent results at the measure and household level.

Statewide ESA Non-Energy Benefits (NEBs) and Equity Criteria Study
The scope of work for the NEBs study was developed in consultation with the Cost-Effectiveness Working Group (CEWG).

The purpose of the study was to 1) update the current NEBs estimates used in ESA cost-effectiveness tests; 2) recommend new NEBs appropriate for ESA and missing from the current framework; and 3) design a Microsoft Excel-based tool to calculate NEBs.

The consultant teams – SERA and Navigant – completed and released the NEBs study in August 2019.[32] The study provided modifications to the calculations of the existing ESA NEBs. The study proposed a new method of allocating NEBs results across program measures using a set of factors that relate to how the measures contribute to NEBs (e.g., energy savings, expenditures, etc.). The new approach improved the existing method of using energy savings as the allocation basis, as the latter did not control for measures where the average energy savings was not correlated with NEBs. In the end, a total of 20 NEBs were accepted for inclusion in the NEBs 2.0 model. The study highlighted the need for additional work to improve the reliability, validity, and relevance of the estimates and the usability of the model. In particular, the study recommended additional research for all NEBs to strengthen the calculations and to establish linkages to the ESA program.

PG&E proposed a California specific NEBs study in its ESA Application Testimony for Program Cycle 2021-2026.

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[32] SERA. Non-Energy Benefits and Non-Energy Impact (NEBs/NEI) Study for the California ESA Program, Vols. 1 and 2, Final. August 2019. See: https://pda.energydataweb.com/#!/documents/2295/view

ESA Portion of the Statewide Energy Efficiency Potential Study
For the first time, low income energy potential was included in the 2019 EE Potential and Goals (P&G) Study conducted by Navigant. The study commenced in December 2018, and the final report was completed in July 2019.[33]

The P&G study made a major update to the forecast methodology for the low-income sector by forecasting savings using a bottom-up approach. While the study has some insightful findings, there are a few key limitations to consider when applying the findings to the ESA program:

1) The measure level data used in the study was adapted from the measure list for residential non-low income, and the study authors assumed all measures installed would be high efficiency and result in energy savings. This limits the usability of the results for the ESA program since the program is designed to also provide health, comfort and safety measures which, in some cases, result in added load.

2) The P&G model is not capable of forecasting increases in energy use. Therefore, ESA program measures that result in negative savings, but are designed to improve participants' health, comfort and safety and/or other non-energy benefits, are omitted from the forecast.

3) The study did not account for the ESA program having its own Commission-approved Policy & Procedures and Installation Standards manuals. By failing to consider the Commission's policies for low-income programs, the P&G Study does not reflect program limitations and could overestimate the true potential in the low-income customer segment.

2019 PG&E Rapid Feedback Project – 1: ESA Impact Evaluation – Savings Disaggregation
The 2015-2017 ESA Impact Evaluation provided program savings at the household level but did not allocate them at the measure level. PG&E retained StatWizards to produce measure-level saving estimates based on Phases 1 and 2 of the Impact Evaluation, to be used for the mid-cycle reporting and PY 2021-2026 ESA Application Testimony, respectively.

Analytical tasks performed to generate measure-specific savings included data coding, data transformation, data aggregation and disaggregation, and related data manipulations to produce forecasts of efficiency measures.

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[33] Navigant. 2019 Energy Efficiency P&G Study, Final Public Report. Prepared for CPUC. July 1, 2019. Adopted August 23, 2019. See: ftp://ftp.cpuc.ca.gov/gopher-data/energy_division/EnergyEfficiency/DAWG/2019%20PG%20Study%20Report_Final%20Public_PDFA.pdf

2019 PG&E Rapid Feedback Project – 2: Household Hardship Reduction Indicators (HHRIs)
PG&E's Prepared Testimony; Ch. I, p. I-47, lines 11-15, requests that the IOUs "propose a per household metric that accounts for both resource and non-resource measures installed in that it reflects overall net benefit or hardship reduction to the customer, for example average annual net energy savings and average annual bill savings" .[34] PG&E retained Grounded Research to assist in the development of this metric, a proposal for which was included in PG&E's ESA 2021-2026 Application. Project results are also attached to this report as Appendix C.

1.11.2. If applicable, submit Final Study Report describing: (1) overview of study; (2) budget spent vs. authorized budget; (3) final results of study; and (4) recommendations.

As described in section 1.11.1 above, six studies were completed during the 2019 PY: 1) 2019 Statewide LINA; 2) PY 2015 Statewide ESA Impact Evaluation; 3) Statewide NEBs Study; 4) ESA Portion of the Statewide Energy Efficiency Potential Study; 5) 2019 PG&E Rapid Feedback Project – 1 to provide an impact evaluation; and 6) 2019 PG&E Rapid Feedback Project – 2 to derive HHRIs, which the IOUs had to address as part of the PY 2021-2026 CARE/ESA Application. PG&E included citations to each of the final study reports as footnotes in Section 1.11.1. See ESA Table 17 for study budgets and expenditures.

1.12. Pilots

1.12.1. For each Pilot, provide (1) a summary describing the activities undertaken in the study since its inception; (2) the study progress, problems encountered, ideas on solutions; (3) the activities anticipated in the next quarter and the next year; and (4) status of Pilot Evaluation Plan (PEP).

Consumption Driven Weatherization (CDWx) Pilot
The CDWx pilot used data-driven analysis to target high usage customers to receive additional weatherization measures that fall outside current ESA program guidelines, with the added benefit of including CSD LIHEAP program offerings. The CDWx pilot commenced in February 2018 and weatherized 50 homes with both ESA and CSD measures in 2018. The pilot findings report was completed in January 2019 and is attached to this report as Appendix D.

Programmable Communicating Thermostat with Time-of-Use (PCT/TOU) Pilot
The electric IOUs were directed to implement a pilot to test a package of EE interventions in selected CARE households characterized by high-energy usage or high-energy burden.[35] The intervention package included enrollment in TOU rate and installation of a PCT. Primary objectives of the pilot were to determine if PCTs are a useful tool in helping customers shift usage away from the TOU peak, and to understand customer interaction and satisfaction with the PCT device. The pilot commenced during the second half of 2018.

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[34] D.19-06-022, Appendix A, p. 7

[35] D.17-12-009, OP 147.

PG&E recruited over 200 customers to participate in the pilot. They were assigned into treatment and control groups. Treatment group customers were provided with a PCT and switched to a TOU rate, while control group customers were assigned to the same TOU rate but did not receive a PCT. Pilot evaluation results would be based on qualitative data collection through three surveys augmented by advanced meter infrastructure data analysis. Interim pilot findings are summarized as follows:

1) Customers were generally disinterested in the device contributing to lower participation than anticipated.

2) Low income housing stock and equipment tend to be older than those found in the general population, making installation feasibility and device compatibility challenging.

3) Software setup errors associated with the PCT devices resulted in data gathering gaps with thermostat operational data.

To adjust for the unexpected software setup errors, PG&E and the IOUs worked closely with the pilot evaluator to adjust the surveys and research plan. Two modified surveys were deployed in November 2019 and January 2020, respectively. The final report was issued in March 2020.[36]

1.12.2. If applicable, submit Final Pilot Report describing: (1) overview of pilot; (2) description of PEP; (3) budget spent vs. authorized budget; (4) final results of pilot (including effectiveness of the program, increased customer enrollments or enhanced program energy savings); and (5) recommendations.

The CDWx pilot was completed during the 2019 PY. The final pilot report is attached to this annual report as Appendix D.

1.13. "Add-Back" Measures

There are no "add-back" measures in PG&E's 2017-2020 program, per D.16-11-022. Cost-effectiveness for the 2017-2020 ESA program was based on a portfolio approach rather than on the cost-effectiveness of individual measures, thus D.16-11-022 did not "add-back" specific measures based on their cost-effectiveness.

PG&E provides the 2012 "add-back" measures that had a low cost-effectiveness threshold per D.12-08-044, and that are still in PG&E's 2019 ESA program.

The add-back measure expenditures ($24,199,945) comprised 17% of PG&E's total $142,741,692 ESA measure expenditure in 2019 (shown in ESA Table 2). See Table 16 for the cost, energy savings impacts, and related metrics of Add-Back Measures.

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[36] Evergreen Economics. Evaluation of the California Statewide Smart Thermostat Time-of-Use Pilot. March 2020. See: https://pda.energydataweb.com/#!/documents/2359/view

1.13.1. If the "add-backs" compromise the IOUs' ability to meet the 2020 Plan goal that 100% of eligible and willing customers will have received all cost-effective ESA program measures, how does the IOU propose to address the shortfall in other parts of the ESA program?

"Add-back" measures did not compromise PG&E's ability to meet the 2020 Plan goal that 100% of eligible and willing customers will have received all cost-effective ESA program measures.

1.14. Low Income Working Groups

The CEWGs and Mid-Cycle Working Groups (MCWG)[37] disbanded in 2018 after completing their assigned tasks. 2019 MFWG activity is summarized below.

Multifamily Working Group
The MFWG was established to support the integration of CAMs for deed restricted MF properties into the ESA program and other MF directives as specified in D.16-11-022. PG&E participated in the MFWG throughout 2019.

MFWG member organizations included: CPUC ED, CPUC Office of Ratepayer Advocates, SCE, PG&E, SDG&E, California Housing Partnership Corporation, Natural Resources Defense Council, National Consumer Law Center, Community Housing Opportunities Corporation, TELACU, and Proteus.

The MFWG detailed its 2019 activities in the MFWG 2019 Annual Report, which can be found at: https://pda.energydataweb.com/#!/documents/2330/view

1.15. Annual Public ESA-CARE Meeting

PG&E and the other IOUs held a public forum via WebEx on June 27, 2019.[38] The IOUs presented an overview of their 2019 ESA and CARE results and discussed CSD-IOU low income leveraging plans.

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[37] The Cost-Effectiveness and WCWGs were originally authorized by D.12-08-044, and reconvened in D.16-11-022, to make recommendations for refinements to improve, wherever possible, the design, administration, delivery and ultimate success of the ESA and CARE programs.

[38] D.12-08-044 ordered the IOUs to convene a minimum of one public meeting per year, within 60 days of their filing of the annual report, and other public meetings as deemed necessary by the IOUs, the ED, the Administrative Law Judge, or the Commission.

1.16. Multifamily Properties (Analysis of Non-Deed Restricted Properties)

1.16.1. The IOUs shall conduct and report an annual analysis of the square footage, energy consumption, ESA program participation, and time since the last retrofit of non-deed restricted multifamily properties with a high percentage of low-income tenants.

PG&E provides an overview of its approach for the 2019 analysis, as compared (SDG&E) approach as outlined in their High Opportunity Projects and Programs (HOPPs) proposal.[39] This overview is provided in Table 1.16.1.1.

Table 5.16.1.1 – Analysis Compliance Table

Analysis Method/SDG&E HOPPs Approach	PG&E Approach	How They Differ/Challenges Faced/Roadblocks
Screen "buildings with eligible ZIP codes for moderate income, low-income, and system capacity constrained areas" using PRIZM code data.	PG&E's approach follows requirements in D.17-12-009 (modifying D. 16-11-022), and guidance document provided by the ED[40], PG&E layered PRIZM code data provided by Athens Research to properties in CoStar to identify buildings located in "self-certified" low- and moderate-income areas by ZIP code.	PG&E took a similar approach by using new Athens Research data that separated single family (SF) and MF household/unit reporting (2018 data combined all residential types, MF + SF). Therefore, PG&E modified the analysis to include geographic areas with a high percentage of MF units only in eligible self-certified areas.
Use CoStar data to further assess which MF buildings had the right mix of physical characteristics.	The PG&E approach uses CoStar data to filter for properties with >5 units, building class (B&C), year since last (reported) retrofit, and common area features. Note physical characteristics in CoStar are limited.	PG&E took a similar approach by using CoStar data. Challenges include the fact that CoStar has limited data on income, year since last retrofit, and physical characteristics. Therefore, narrowing the sample population with these factors is difficult. Additionally, CoStar only reports rentable property square footage, it does not include common areas.

[39] Per D.17-12-009 (modifying D.16-11-022), the Commission ordered the IOUs to adopt, as appropriate, the approach to multifamily non-deed analysis as outlined in SDG&Es AL 2865 E-C, Submission of High Opportunity Projects and Programs (HOPPs) Proposal – Multifamily HOPP Program (SDG&E 3318), p. 16

[40] ED November 30, 2018 Memo Regarding Non-Deed Restricted, Multifamily Buildings Assessment in the ESA-CARE Annual Report

At the time of analysis, SDG&E used a tool created by a third-party, Detectant, to determine Energy Use Intensity (EUI).	PG&E reported out on energy consumption and EUI for residential spaces only since common area sq. ft. was not available at the time of this analysis.	PG&E did not use a third-party tool to determine EUI. PG&E has contracted with Res-Intel to improve its understanding of all MF properties in its territory. PG&E has engaged Res-Intel to refine its MF properties meter mapping. PG&E expects this data to be available for use by the end of 2020.
The IOUs can use Energy Star Portfolio Manager to benchmark MF properties that meet the ESA "targeted self-certification" geographic area requirements	In 2019, PG&E used their Building Benchmarking database to analyze all previously benchmarked MF properties (self-benchmarked by property owners or programs e.g. ESA, MUP, LIWP, etc.). None of the buildings in the Building Benchmarking database were located in a geographic area with >80% of residents meeting low income eligibility.	

Methodology

2019 marked PG&E's second annual analysis of non-deed restricted MF properties. In 2018, the first year of analysis, PG&E focused on determining the volume of the non-deed restricted MF market in PG&E's service territory and analyzing a subset of those properties that have a high percentage of low income tenants. To do this, PG&E used CoStar data to estimate the total number of non-deed restricted properties within PG&E's territory and to identify properties in areas with a high percentage of low income tenants (>80%) by using PRIZM data from Athens Research.

In 2019, PG&E acquired updated CARE eligibility data from Athens Research to use in conjunction with updated CoStar data. The updated Athens Research data provided a breakdown of potentially ESA-eligible households/units by SF and MF, whereas in 2018, data was presented by total residential household/units (combining SF with MF). Therefore, percentages of low income tenants may vary when combining all SF and MF compared to analyzing only the MF market. PG&E presents the updated estimated number of properties from CoStar by CARE eligibility according to percentage of Federal Poverty Guidelines (FPG) thresholds in Table 1.16.1.2. As of 2019, PG&E estimated 1,055 non-deed restricted properties[41] located in geographic areas with a high percentage (>80%) of low income tenants. (Note the total number of properties from 2018 to 2019 vary due to updated Athens Research data.)

[41] Actual number of properties may vary. CoStar is not representative of all properties within a geographic region.

Table 1.16.1.2 – Non-Deed Restricted Property Estimates by ESA Eligibility

PG&E Multifamily Market (+5 units)						
	Deed			Non-Deed		
% at or below 200% FPG	Properties	Buildings	Units	Properties	Buildings	Units
≤ 50%	1,246	7,756	115,311	16,415	42,519	480,889
50% - 65%	512	4,165	40,225	3,728	16,515	133,719
65% - 80%	402	4,123	30,156	2,340	8,528	56,369
≥ 80%	307	4,240	20,537	1,055	3,483	22,237
Total	**2,471**	**20,284**	**206,229**	**23,537**	**71,045**	**693,214**

Results

The target population for the analysis is non-deed restricted properties with a high percentage of low income tenants (>80% of residents are at or below the 200% FPG). PG&E analyzed 160 properties (15% of properties in geographic areas with >80% low income tenants). Table 1.16.1.4 and Table 1.16.1.5 summarizes the 160 properties[42] total energy. Note some properties may only receive one fuel commodity from PG&E, see Table 1.16.1.3 below for breakdown by fuel type.

Table 1.16.1.3 – Fuel Service Breakdown

PG&E Service	# of Properties
Gas and Electric	140
Electric Only	16
Gas Only	4
Total	**160**

[42] Annual usage is July 1, 2018 to June 31, 2019. An error in the 2018 energy consumption data from the 2018 analysis was identified and corrected for the 2019 analysis. It was determined that the error consisted of incorrect billing data and was corrected for 2019.

Table 1.16.1.6 – Multifamily Non-Deed Restricted Property Analysis – Electric Consumption

Category	Number of Properties	Average Sq. Ft.	Total 2019 Annual MWh	Total 2019 Annual MWh for Units	Total 2019 MWh for Units	Total 2019 Annual MWh got Master Meters
Sq. Ft. <99,999	154	17,905	11,921	300	11,620	N/A
Sq. Ft. >100,000	2	156,156	915	4	911	N/A
Sq. Ft. Data Missing	N/A	N/A	N/A	N/A	N/A	N/A
Totals	**156**	**174,061**	**12,836**	**304**	**12,531**	**N/A**

Table 1.16.1.7. – Multifamily Non-Deed Restricted Property Analysis – Gas Consumption

Category	Number of Properties	Average Sq. Ft.	Total 2019 Annual MWh	Total 2019 Annual MWh for Units	Total 2019 MWh for Units	Total 2019 Annual MWh got Master Meters
Sq. Ft. <99,999	142	19,272	433,070	10,209	422,861	N/A
Sq. Ft. >100,000	2	156,156	28,553	0	28,553	N/A
Sq. Ft. Data Missing	N/A	N/A	N/A	N/A	N/A	N/A
Totals	**144**	**175,428**	**461,623**	**10,209**	**451,414**	**N/A**

PG&E's analysis included calculating EUI for all properties (Table 1.16.1.6). The analysis used rentable[43] square footage obtained from CoStar and residential dwelling unit consumption data. Of the 140 properties that receive both gas and electric service from PG&E, the average EUI was 29.8. Twenty properties in the analysis receive only one fuel service (gas or electric) from PG&E.

[43] CoStar only reports rentable property square footage, it does not include common areas.

Table 1.16.1.8 – Energy Use Intensity for Non-Deed Restricted Properties: Residential Dwelling Units

2019 Residential Dwelling Unit EUIs			
	Electric and Gas Properties (Average)	Electric Only Properties (Average)	Gas Only Properties (Average)
EUI	29.80	13.10	27.93
# of Properties	140	16	4

There were no known retrofits reported in CoStar for the properties analyzed in 2019.

ESA program participation across the 160 properties (~3,525 units) is outlined in Table 1.16.1.7. Approximately 61% of units across 160 properties have received ESA treatment since 2006.

Table 1.16.1.9 –ESA Program Participation by Year

Yr. last ESA treatment	# of units treated	# of properties
2006	196	32
2007	91	24
2008	153	38
2009	179	34
2010	72	35
2011	215	44
2012	117	28
2013	174	35
2014	194	54
2015	78	35
2016	47	21
2017	175	29
2018	115	25
2019	426	47

1.16.2. Describe coordination efforts with the California Advanced Services Fund's new Broadband Public Housing Account.

PG&E's CAM implementer actively reviews the Broadband Public Housing projects in efforts to treat these properties through CAM. The PG&E CAM implementer screens ESA CAM projects for broadband participation during the intake phase of program participation. In addition, CAM sent a postcard to all properties participating in the broadband program as a targeted outreach effort. In 2019, 8% of the PG&E CAM pipeline are listed on the Broadband Public Housing list.

2. California Alternate Rates for Energy (CARE) Program

CARE Program Overview
The CARE program provides a monthly discount on energy bills for qualifying residential single family households, tenants of sub-metered residential facilities, nonprofit group living facilities, agricultural employee housing facilities and migrant farm worker housing centers throughout PG&E's service area.[44]

2.1. Participant Information

2.1.1. Provide the total number of residential CARE customers, including sub-metered tenants, by month, by energy source, for the reporting period and explain any variances of 5% or more in the number of participants.

The total number of residential CARE customers, including sub-metered tenants, is included in CARE Table 8 – Participants per Month.

During the 2019 PY, no monthly variances of 5% or more occurred.

2.1.2. Describe the methodology, sources of data, and key computations used to estimate the utility's CARE penetration rates by energy source.

PG&E used the joint utility methodology adopted by the CPUC in D.01-03-028 for developing monthly penetration estimates in 2019.[45] This methodology entails annual estimation of eligibility for CARE, ESA, FERA, and other income-by-household size parameters at the small area (block group, census tract, ZIP+2, etc.) for each IOU territory and for the state as a whole.

Sources for the 2019 eligibility estimates included the January 2019 Health and Human Services (HHS) Poverty Guidelines[46] ("bundling" one- and two-person households at the HHS-defined 200% FPG limit as required by AB 327), current year small area vendor marginal distributions on household characteristics, Census 2010 Summary File 3 (SF3) data, Census American Community Survey 2014-2018 Public Use Microdata Sample (PUMS) data, utility meter and master meter household counts, Department of Finance Consumer Price Index series, and various Geographic Information System sources.

The method takes into consideration American Community Survey microdata relationships between guideline status (above/below 200% FPG), tenure, and fuel payment relationships. These cross classifications are fitted to small area (block group) marginals to produce payer type specific distributions, which can be aggregated to various other geographical levels.

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[44] To qualify for the CARE, the total customer household income must be equal to or less than 200% of the FPG, with income adjustments for family size.

[45] Athens Research performs the analysis using the joint utility methodology to provide the estimates for the California IOUs.

[46] Federal Register/Vol. 84, No. 22/February 1, 2019/Notices; pps.1167-1168.

The method also incorporates the impact of labor force changes (unemployment and other forms of job separation, as well as positive changes). The method adjusts block group marginal distributions on household income based on sub-state modeling that incorporates Current Population Survey, Integrated Public Use Microdata Survey Data, American Community Survey Data, and California Employment Development Department (EDD) county and Metropolitan Statistical Area level labor force series. This adjustment to block group income marginal is then incorporated into the otherwise "standard" estimation approach to produce small area estimates reflecting small area income changes due to labor market forces.

Estimates from the block group level are aggregated to county/utility and whole utility level, among other aggregations. Annually, PG&E applies county/utility level eligibility fractions to a new set of "technical eligibility counts" (for CARE, these are metered and sub-metered occupied housing units) to obtain an estimate of income/demographic eligibility in household count form.

PG&E counts the number of households (by small area, by county, and overall) that are enrolled in CARE. The CARE household total, including individually metered and sub-metered occupied housing units, is divided by the total income/demographic eligibility.

2.1.2.1. Describe how the estimates of current demographic CARE-eligibility rates, by energy source for the pre-June 1st periods, were derived.

The joint utility methodology, as described above, was used throughout 2019.

2.1.2.2. Describe how the estimates of current CARE-eligible meters were derived. Explain how total residential meters were adjusted to reflect CARE-eligible meters (i.e., master meters that are not sub-metered or other residential meter configurations that do not provide residential service.).

CARE eligibility rates by small and large areas are developed so that they apply to individual residential meters and sub-metered dwelling units only. Non sub-metered master meters and other meters that do not provide residential service are not included in the "technical eligibility" meter counts.

2.1.2.3. Discuss how the estimates of current CARE-eligible households were developed.

See PG&E's response above to Section 2.1.2.2. Note that the methodology is based on estimating small area (block group) level household size by income and householder-age tabulations for the current year, and connecting these estimates with small area counts of households that are individually metered or sub-metered. Block group/utility-specific estimates are then disaggregated/aggregated to various geographic levels within a given utility area: ZIP+2, ZIP, tract, county, territory, etc. Statewide estimates, regardless of utility boundaries, are also provided at small and large area levels.

2.1.2.4. Describe how current CARE customers were counted.

PG&E runs a monthly report of the billing system for all accounts currently enrolled in CARE. This monthly report incorporates all CARE customer information necessary for

reporting, including energy source information (electric, gas or both) and CARE enrollment and recertification dates.

In the case of sub-metered tenants receiving CARE discounts from their master-metered facilities, PG&E runs a separate monthly report to count the number of sub-metered dwelling units that are flagged as being enrolled in CARE.

2.1.2.5. Discuss how the elements above were used to derive the utility's CARE participation rates by energy source.

The participation rate by energy source is the total number of participating CARE customers by energy source divided by the estimated eligible CARE population by energy source.

2.1.3. Provide the estimates of current demographic CARE-eligibility rates by energy source at year-end.

Electric-only:	28.6%
Gas-only:	29.2%
Combined electric/gas:	24.5%
Total:	26.3%

2.1.4. Provide the estimates of current CARE-eligible sub-metered tenants of master-meter customers by energy source at year-end.

PG&E estimates that 45,817 electric and 32,518 gas sub-metered tenants were eligible for CARE in 2019.

2.1.5. Provide the current CARE sub-metered tenant counts by energy source at year-end.

As of year-end 2019, there were 25,646 electric and 20,475 gas sub-metered tenants enrolled in CARE.

2.1.6. Provide the current CARE sub-metered penetration rates by energy source at year-end.

In 2019, approximately 56% of the estimated CARE-eligible sub-metered electric tenants and 63% of the estimated CARE-eligible sub-metered gas tenants were enrolled in CARE.

2.1.7. Discuss any problems encountered during the reporting period administering the CARE program for sub-metered tenants and/or master-meter customers.

To advertise the CARE program to eligible tenants of sub-metered residential facilities, PG&E mails information packets containing program applications to landlords/managers annually. However, some packets are either returned or undelivered due to the high turnover of landlords/managers. This results in lower new enrollments than expected. Some issues encountered in 2019 were:

- Some landlords/managers were concerned that their CARE-enrolled tenants used more energy than the average tenant in the facility. This resulted in the master

metered customer having to pass on more of a discount than they received from PG&E. In these cases, PG&E explained to the landlord/manager how the sub-metered discount works. If the landlords/managers were not satisfied with the explanation, PG&E advised the landlords/managers to contact the CPUC or their County's Department of Weights and Measures (DWM).

- Insufficient discount information on the tenant bill from the facility billing agency. For example, the CARE discount might not be shown as a separate line item, making it difficult for the tenant to verify whether they were receiving the discount. When a tenant called PG&E with questions, PG&E confirmed that the tenant was certified for the program and reviewed the bill with the tenant to ensure they were receiving the discount. If it appeared the tenant was not receiving the CARE discount, the tenant was advised to contact their manager or billing agency for further clarification.[47] If the tenant did not obtain resolution with their billing agency and/or sub-metered facility manager, PG&E advised the tenant to contact their County's DWM. DWM helps tenants with meter reading accuracy/testing, proper meter installation, billing accuracy, and verification of correct rate. If contacting the DWM did not resolve the tenant's billing question, the tenant was advised to file a complaint with the CPUC.

- PG&E provided a monthly CARE certification report to landlords/managers. PG&E also requested landlords/managers to contact PG&E when updated information is needed. Nonetheless, some landlords/managers still failed to notify PG&E when a CARE certified tenant moved out of the facility. To solve this problem, PG&E provided detail instruction on the certification report cover letter that required the landlords/managers to notify PG&E in writing via email or fax if certified tenants have moved out.

- PG&E observed a continued issue related to turnover within Mobile Home Park (MHP) ownership and management. When changes in ownership happened, PG&E worked with the new owners to transfer existing CARE certified tenant data to new accounts and informed them about the CARE program and the processes involved. When landlords changed managers, they often failed to notify PG&E with new contact information which resulted in undelivered reports and delayed communications.

- Some tenants move from one MHP to another MHP or from a residential house to an MHP and thought their CARE discount would automatically transfer. PG&E explained to them that their CARE discount was not transferable and advised them to fill out a sub-meter application to re-apply for the CARE program. Some new MHP owners or managers did not know how to calculate electricity and gas discounts for their tenants. PG&E's CARE staff provided high-level information regarding the tiered rate structure or referred them to the billing department for more detailed explanations.

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[47] California Civil Code Section 798.43.1(c) requires that: "The management shall notice the discount on the billing statement of any homeowner or resident who has qualified for the CARE rate schedule as either the itemized amount of the discount or a notation on the statement that the homeowner or resident is receiving the CARE discount on the electric bill, the gas bill, or both the electric and gas bills."

- Many MHPs had multiple account numbers or had different account numbers for either electric or gas which caused a great deal of confusion to MHP owners, tenants and CARE staff when enrolling and administrating the discount. The owner or the tenant often provided the wrong account number or did not provide all the applicable account numbers during the enrollment process, resulting in CARE staff mis-certifying or not being able to certify the tenant on all accounts.

2.2. CARE Budget Summary

2.2.1. Please provide CARE program summary costs.

CARE Budget Categories	Authorized Budget [a]	Actual Expenses [a]	% of Budget Spent
Outreach [a]	$9,576,653	$7,054,392	74%
Processing, Certification, Recertification	$2,088,796	$589,078	28%
PEV	$1,748,793	$958,669	55%
IT Programming	$2,054,261	$499,680	24%
Cooling Centers	$149,521	$110,669	74%
Community Help and Awareness of Natural Gas and Electric Services Program (CHANGES) Pilot Program	$527,869	$513,962	97%
Measurement and Evaluation	$159,676	$97,138	61%
Regulatory Compliance	$1,125,679	$450,594	40%
General Administration	$1,124,533	$756,052	67%
CPUC ED Staff	$128,000	$166,022	130%
Total Expenses [b]	**$18,683,781**	**$11,196,256**	**60%**
Subsidies and Benefits	$593,186,130	$638,701,809	108%
Total Program Costs and Discounts	**$611,869,911**	**$649,898,065**	**106%**

[a] Includes expenses for incremental CARE/FERA M&O efforts as approved in Non-Standard Disposition Letter re: PGE AL 3990-G/5329-E, 3990-G-A/5329-E-A, and 3990-G-B/5329-E-B.
[b] Program authorized budget per D.16-11-022, and actual expenses have been updated to include $906,314 in employee benefits costs approved in the GRC D.17-05-013.

2.2.2. Please provide the CARE program penetration rate to date.

CARE Penetration			
Participants Enrolled	**Eligible Participants**	**Penetration Rate**	**Target Met? [a]**
1,382,663	1,446,414	95.6%	Yes

[a] PG&E interprets the target to be the 90% CARE penetration goal set in D.08-11-031 by the Commission. PG&E is currently on track to meet this goal during the 2017-2020 budget cycle.

2.2.3. Report the number of customer complaints received (formal or informal, however and wherever received) about their CARE recertification efforts, and the nature of the complaints.

In 2019, PG&E received no complaints, formal or informal, about its CARE recertification efforts.

2.3. CARE Program Costs

2.3.1. Discount Cost

2.3.1.1. State the average monthly CARE discount received, in dollars, per CARE customer by energy source.

Electric:	$37.53
Gas:	$9.01

2.3.1.2. State the annual subsidy (discount) for all CARE customers by energy source.

Electric:	$525,905,795
Gas:	$112,796,014
Total:	$638,701,809

2.3.2. Administrative Cost

2.3.2.1. Show the CARE residential program's administrative cost by category.

PG&E shows the CARE residential program's administrative cost by category in CARE Table 1 – Overall Program Expenses.

2.3.2.2. Explain what is included in each administrative cost category.

Outreach
This cost category includes:

- M&O campaigns, such as direct mail, email, telemarketing, AVR, digital media and radio
- Retention outreach
- Printing of bill inserts, applications, advertising and promotional materials, annual notifications to sub-metered facilities (Senate Bill 920), and other CARE program materials.
- Postage and handling fees
- Purchase and storage of promotional items, other goods and supplies
- CARE toll-free line maintenance and operation
- Capitation fees to COCs for new CARE enrollments and assistance with the PEV process, community event costs, community outreach activities and partnerships

- Incremental CARE/FERA M&O efforts
- Staff labor related to M&O
- Other expenses include travel, membership fees, sponsorships, conferences, catering and other outreach-related costs

Processing, Certification and Recertification
This cost category encompasses day-to-day administrative tasks associated with processing CARE applications, including:

- Opening, sorting, scanning, processing, and data entry of CARE applications
- Initiating and responding to customers' inquiries by mail, email or phone regarding program participation
- Resolving billing issues related to program enrollment
- Tracking CARE enrollment and recertification statistics in support of operations, management and regulatory
- Training and other related costs

Post-Enrollment Verification (PEV)
This cost category encompasses day-to-day administrative tasks associated with completing PEV and High Usage verifications, including the following:

- Opening, sorting, scanning, data entry and processing of CARE PEV and High Usage correspondences
- Printing and mailing of PEV and High Usage letters
- Initiating and responding to customers' inquiries by mail, email or phone regarding the PEV and High Usage process
- Resolving billing issues
- Tracking CARE PEV and High Usage statistics in support of operations, management and regulatory support
- Training and other related costs

IT Programming
This category includes:

- Ongoing software enhancements and licensing for PG&E's current technology supporting CARE program activities
- Routine and non-routine system maintenance
- Automated CARE enrollment internal data exchanges among CARE, ESA, REACH and LIHEAP programs
- External data exchanges with IOUs, municipalities and water utilities
- Data reporting and analysis
- CARE system enhancement and maintenance
- Online applications enhancement and maintenance
- Website and Interactive Voice Response (IVR) enhancement and maintenance
- Other IT-related obligations

Cooling Centers
This cost category encompasses day-to-day administrative tasks associated with operating cooling centers, including:

- Direct funding to cooling centers/program administrators
- Printing of bill insert, brochures and other materials
- PG&E's Cooling Centers website and toll-free line maintenance and support
- Staff labor
- Travel expenses and other program management related costs

Pilots
This cost category includes any pilot projects for the program. For 2019, this included the reimbursement cost for the ongoing CHANGES program and staff labor to support the program.

Measurement & Evaluation
This cost category includes all measurement and evaluation related to the CARE program, including contract expenses for the annual study of CARE customer eligibility estimates and other studies where appropriate.

Regulatory Compliance
This category includes costs for staff labor and travel expenses associated with preparing regulatory filings, including:

- Program applications
- Advice letters
- Tariff revisions, comments and reply comments
- Hearings
- Preparation of regulatory compliance reports
- Preparation of data request responses
- Attendance at working group sessions, public input meetings and public workshops
- Travel expenses and other related costs

General Administration
This category includes:

- Program management labor
- Office supplies and equipment
- Envelopes and printing of CARE letters
- Customer research
- Propensity model costs
- Other expenses include training, travel, membership fees, sponsorships, conferences, catering and other administrative-related costs

CPUC Energy Division Staff
This cost category includes funding for ED staff.

2.3.3. Provide the year-end December 31 balance for the CARE balancing account.

At year-end 2019, the CARE electric balancing account was under-collected and reflected a year-end debit balance of $76,355,535 while the CARE gas balancing account was over-collected and reflected a year-end credit balance of $21,476,853.

2.3.4. Describe which cost categories are recorded to the CARE balancing account and which are included in base rates.

All CARE administrative costs as well as the revenue shortfall associated with the CARE discount are included in the CARE balancing account.[48]

[48] D.02-09-021

2.3.5. Provide a table showing, by customer class, the CARE surcharge paid, the average bill paid, the percentage of CARE surcharge paid relative to the average bill, the total CARE surcharge collected, and the percentage of total CARE revenues paid.

PG&E includes the CARE surcharge and revenue data in CARE Table 10 – CARE Surcharge & Revenue.

2.4. Outreach

2.4.1. Discuss utility outreach activities and those undertaken by third parties on the utility's behalf.

CARE Acquisition Outreach
Throughout 2019, PG&E's approach to marketing the CARE program consisted of a multi-touch, multi-channel strategy with campaigns including direct mail and email, bill inserts, radio advertising and earned media (PR), online advertising, in both English and Spanish, as well as multilingual printed collateral and online content. Through this mix of tactics, PG&E's CARE campaigns focused on building awareness and engagement territory-wide, as well as targeting specific audiences such as customers with a high propensity for eligibility, and those who had participated in the program but did not recertify. With enrollment penetration at or over 90% throughout the year, PG&E also focused on expanding the reach of marketing to drive participation among hard to reach audiences and customers who previously received marketing messages but had not yet enrolled.

PG&E used the CARE program propensity model to identify and target customers who were most likely to enroll in the program. The model is based on customer attributes and behaviors such as income, language preference, education, energy usage trends, payment patterns and location. The model then creates a ranking of customers according to their likelihood or propensity to enroll in the CARE program. The model divides the customer into ten groups or deciles – decile 1 being the most likely to participate in CARE, with decile 10 being the least likely. Each decile contains 10% of the eligible population. As of December 2019, over 60% of CARE enrollees were captured in the top three deciles of the CARE program propensity model that was used for email and direct mail acquisition targeting. Based upon 2019 campaign results, sending communications to select customers using the CARE propensity model generated 30% more enrollments than sending communications to the same number of customers selected randomly. In the fourth quarter (Q4) of 2019, PG&E refreshed the CARE propensity model using the most current customer data to further increase opportunities to identify prospective CARE customers.

2019 Direct Mail and Email
PG&E's CARE new enrollment and recertification campaigns used the CARE propensity model to target newly eligible customers and customers who were previously enrolled in CARE but failed to recertify for the program and customers eligible to recertify their participation. In 2019, these targeted campaigns relied heavily on email and direct mail communications, and these efforts combined to slightly outperform 2018 and drove approximately 228,000 customer enrollments, compared to 225,000 the prior year.

PG&E conducted quarterly email and direct mail campaigns throughout 2019, as shown in Figures 2.4.1.1 and 2.4.1.2. Below are some of the highlights and samples of the creative from these campaigns.
In January and March, PG&E deployed the Q1 CARE acquisition campaign direct mail and email campaign targeting approximately 68,000 CARE-eligible customers. These efforts contributed approximately 16% or 9,600 of the more than 60,000 new CARE enrollments in Q1.

In June, PG&E deployed an acquisition campaign that included direct mail and email. The campaign targeted approximately 380,000 customers who were identified as CARE-eligible to attempt to better target FERA-eligible customers with the intent of improving FERA penetration. The campaign included a subset of approximately 22,000 customers who were identified as FERA-eligible based on available household size and household income indicators. New creative was developed to increase the prominence of the FERA message via co-promotion with CARE. Direct mail and email efforts drove nearly 19%, or approximately 9,900, of the more than 53,000 new CARE enrollments in Q2.

Q3 campaigns drove the largest response, with more than 14,000 CARE enrollments attributed to direct mail or email. This amounted to almost 24% of the nearly 60,000 new enrollments in Q3. PG&E once again targeted approximately 380,000 customers and coordinated the timing of the email and direct mail with increased media spend, including a radio advertising campaign with increased media placements in ZIP codes that had lower rates of CARE enrollment historically.

Q4 CARE enrollment activity declined somewhat, with approximately 8,300 out of 53,000 enrollments coming from email and direct mail. It is likely that these results were impacted by changes in timing and scope due to the Public Safety Power Shutoff (PSPS) events called in Q4 of 2019.

Figures 2.4.1.1 – Direct Mail Example

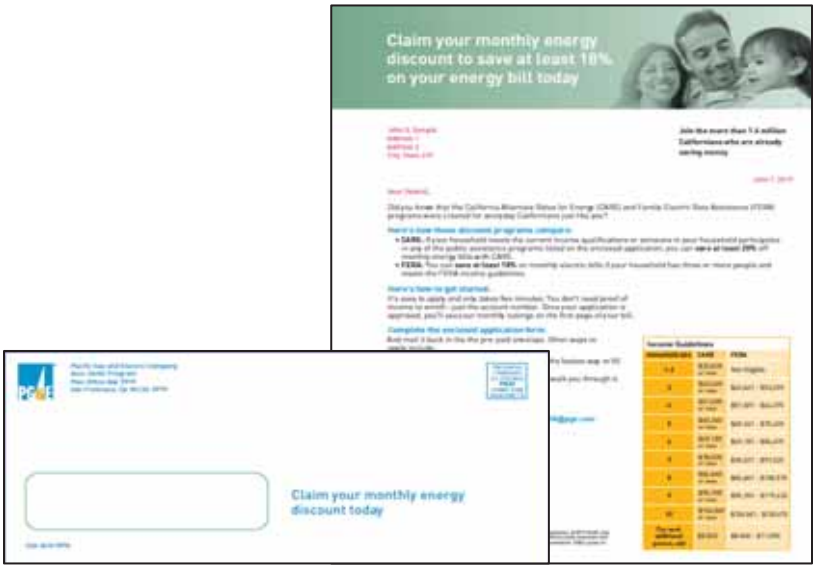
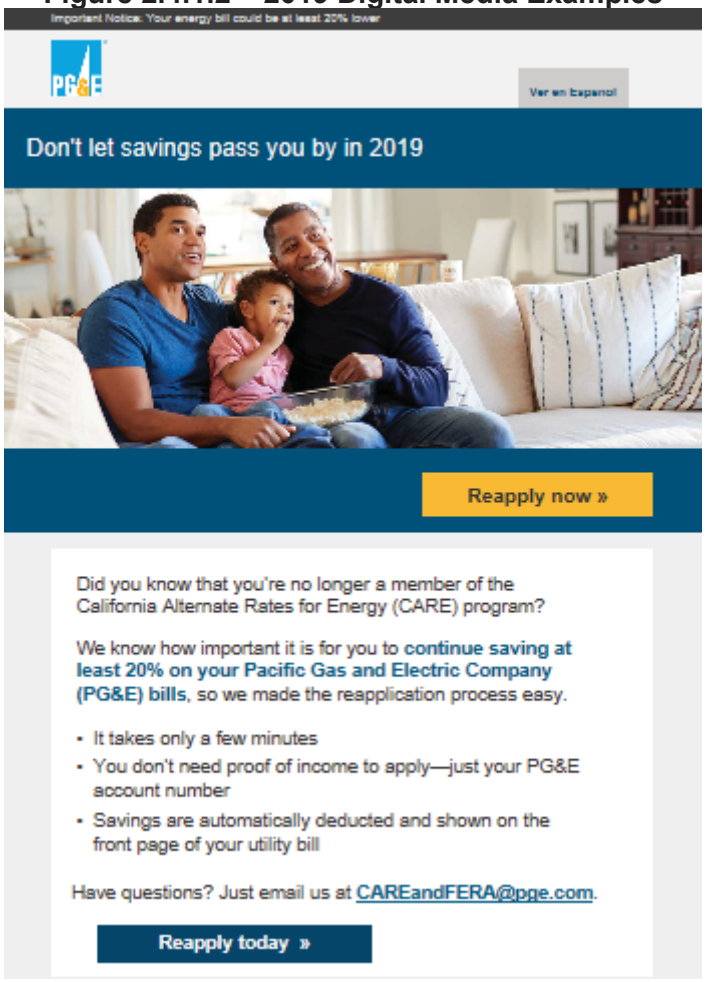


Figure 2.4.1.2 – 2019 Digital Media Examples



Bill Inserts

PG&E included the CARE/FERA application as an insert to customers' monthly bill package five times throughout the year. See Figures 2.4.1.3 and 2.4.1.4 for examples of bill inserts. The bill inserts distributed in June included updated income guidelines for CARE and FERA, and were sent to approximately 2.7 million non-CARE customers in the June/July bill package. Bill inserts continue to be an effective enrollment channel, delivering over 13,313 enrollments throughout the year.

Figure 2.4.1.3 – Bill Insert Cover Panel Example

Figure 2.4.1.4 – CARE/FERA Bill Insert with FERA headline (English/Spanish)

Radio Advertising and Earned Media (PR)

As a complement to online and targeted marketing, PG&E's media plan supported PG&E's multi-channel outreach and helped to maintain high levels of CARE awareness and build FERA awareness and deepen customer engagement while retaining customers. PG&E implemented paid radio, Spanish-language television (TV) interview segments and secured added value media placements to maintain awareness and deepen understanding of CARE and FERA among hard-to-reach segments of the customer base. Radio and TV interview segments provided a broad coverage, promoting CARE and FERA messages complementing all other tactics. The media campaign included 60 second radio and 15 second traffic radio sponsorship ads that aired in Bakersfield, Sacramento/Stockton/Modesto, Salinas/Monterey and Fresno/Merced Metropolitan Statistical Areas (MSAs). Digital radio on Pandora ran concurrently and focused on 339 designated hard-to reach ZIP codes (i.e., high-poverty and rural locations) and those that represent lower CARE penetration rates.

PG&E aired two-minute on-air interviews with five local Spanish TV stations that ran across Bakersfield, Fresno, Sacramento, and San Francisco. In addition, PG&E used home-delivered print vehicles (i.e. Retail Me Not Everyday, ValPak, & Door Hangers) to encourage customers to enroll in CARE/FERA.

PG&E continued to participate in media interviews to promote CARE, FERA and other programs with the following outlets:

- **KFTV Univision "Despierta Valle Central** – "Wake up Central Valley" daily morning show (airs Monday – Friday 5-7 am) serves residents in and around the Central Valley. Despierta Valle Central reaches approximately 18,000 listeners in the Fresno-Visalia DMA.

- **KLOQ Radio Lobo 98.7 FM and KGAM Magia 106.3 FM** – Community segments targeting adult men ages 18-49 and adult women ages 25-54, with coverage in Merced and Stanislaus counties.

- **Radio Bilingue** – Targets the cities of Fresno, Modesto, Stockton, Bakersfield, Calexico, El Centro, Mendocino and Paso Robles with high-impact educational radio campaigns. Reaches approximately 250,000 unique listeners per week.

- **KXZM Radio** - Covers the Bay Area including San Jose and San Francisco, targeting Hispanic adults ages 18-65.

- **KGRB Radio** – Covers the Sacramento area, targeting Hispanic adults ages 18-65.

- **KXSF Radio** – One of the longest broadcasting Spanish language radio stations in the Bay Area, KZSF covers Santa Clara, San Mateo, Alameda and Contra Costa counties. Programming is made up of local shows and talent with strong ties to the Hispanic community, and targets adults ages 25-60.

- **KTFF Unimas 61** – pre-recorded 15-minute TV interview. KTFF targets Hispanic and Bilingual adults ages 18-54, and covers Merced, Madera, Fresno, Kings and Tulare counties.

- **KVMX** – pre-recorded 30-minute interview and three 5-minute segments. The interview and segments aired on six stations on six network stations in Modesto, Merced, Sacramento, and Monterey.

- **KLBN** – 30-minute interview segment that covered Winter and Holiday safety, CARE, FERA and ESA programs including program requirements and how to apply. KLBN targets Hispanic adults ages 18 and up in the Central Valley including Fresno, Madera, Merced and Tulare.

In March 2019, PG&E participated in a pre-recorded phone interview with Vietnamese American Roundtable, a nonprofit organization based in San Jose with a mission to mobilize, advocate for, and inform the Vietnamese community of the critical issues that impact their lives. The interview was conducted in Vietnamese and divided into four 10-minute segments that focused on CARE, FERA, ESA, and Medical Baseline programs. The interview also included information about PSPS notifications for Medical Baseline customers that encouraged customers to update their contact information. The show

aired on KVVN-1430 AM and KSJX-1500 AM at different times during the day and replayed throughout the month of April.

Online Advertising

In 2019, PG&E deployed an "always-on" digital media campaign for CARE and FERA. To broaden the reach of CARE marketing and better leverage the convenience of online applications, PG&E expanded online marketing by increasing online advertising media spending by nearly 30% and adding new creative mid-year. The strategy included search engine marketing, digital display advertising, and social media ad placements. The campaigns ran territory-wide, with increased spending in ZIP codes selected for special focus based on lower penetration rates or on rural and/or high poverty areas. The CARE digital campaign once again proved to be an integral part of PG&E's marketing strategy, as it delivered approximately 337 million impressions[49], more than 466,000 www.pge.com CARE page visits and more than 47,000 completed applications, totaling an estimated 32% increase compared to 36,000 in 2018. Digital display advertising (e.g., banner ads) drove the majority share, or 62% of applications, while Search Engine Marketing and Google Gmail advertising each contributed approximately 19% of the completed applications. Additionally, the 466,000 landing page visits enabled PG&E to retarget these customers with additional communications, opt-in messaging and online ads.

Figure 2.4.1.4 – 2019 Digital Media Examples

Additional Marketing Highlights

Hard-to-Reach Customers Media Campaign

A coordinated awareness media campaign with focus on hard-to-reach audiences launched in mid-September and continued through the end of the year[50]. The media

[49] An impression measures how many times an advertisement is retrieved from its source and shown on a web page or other online media.

[50] PSPS pauses and restarts starting early-October disrupted digital and broadcast schedules during Q4 and resulted in some media buys being shifted to later in the year.

campaign included radio, digital radio, TV interviews and home-delivered print. ZIP code targeting was used to identify key areas with opportunities for increased program enrollment. PG&E identified these areas by lower penetration numbers. In Q4 of 2019, a combination of approximately 700,000 Valpak inserts (shared mail delivered by the USPS) and approximately 269,000 doorhangers were delivered to these households, as well as increased advertising placements in these markets.

New Mover Program
PG&E continued the New Mover Program, working with a third-party service provider that aids those who would like help setting up cable, internet and satellite serves when moving to a new home or apartment. During this process, the representative asks a series of questions and offers to send the information to the customer. This program generated 2,161 applications in 2019.

CARE/FERA Landing Page
Throughout 2019, PG&E leveraged www.pge.com to engage with customers; highlighting information about respective program tips and tools to support their energy management journey. In order to make it easier for customers to get enrolled in the right program, PG&E campaigns routinely drove online visitors to a combined CARE and FERA website landing page. This page presents program requirements, key program differences and increase FERA visibility, and prominently links to the joint application form for CARE and FERA. Online enrollments accounted for 57% of the 2019 CARE enrollments (132,666).

HERs
PG&E promoted CARE in the electronic version (eHER) of the April 2019 HER, while the print version promoted FERA and the increase in the discount percentage that went into effect in 2019, as shown in Figure 2.4.1.5. HERs were sent to customers that were deemed eligible for the CARE program according to the probability model in addition to customers that were currently receiving HERs.

Figure 2.4.1.5 – CARE eHER and FERA Print HER Marketing Modules

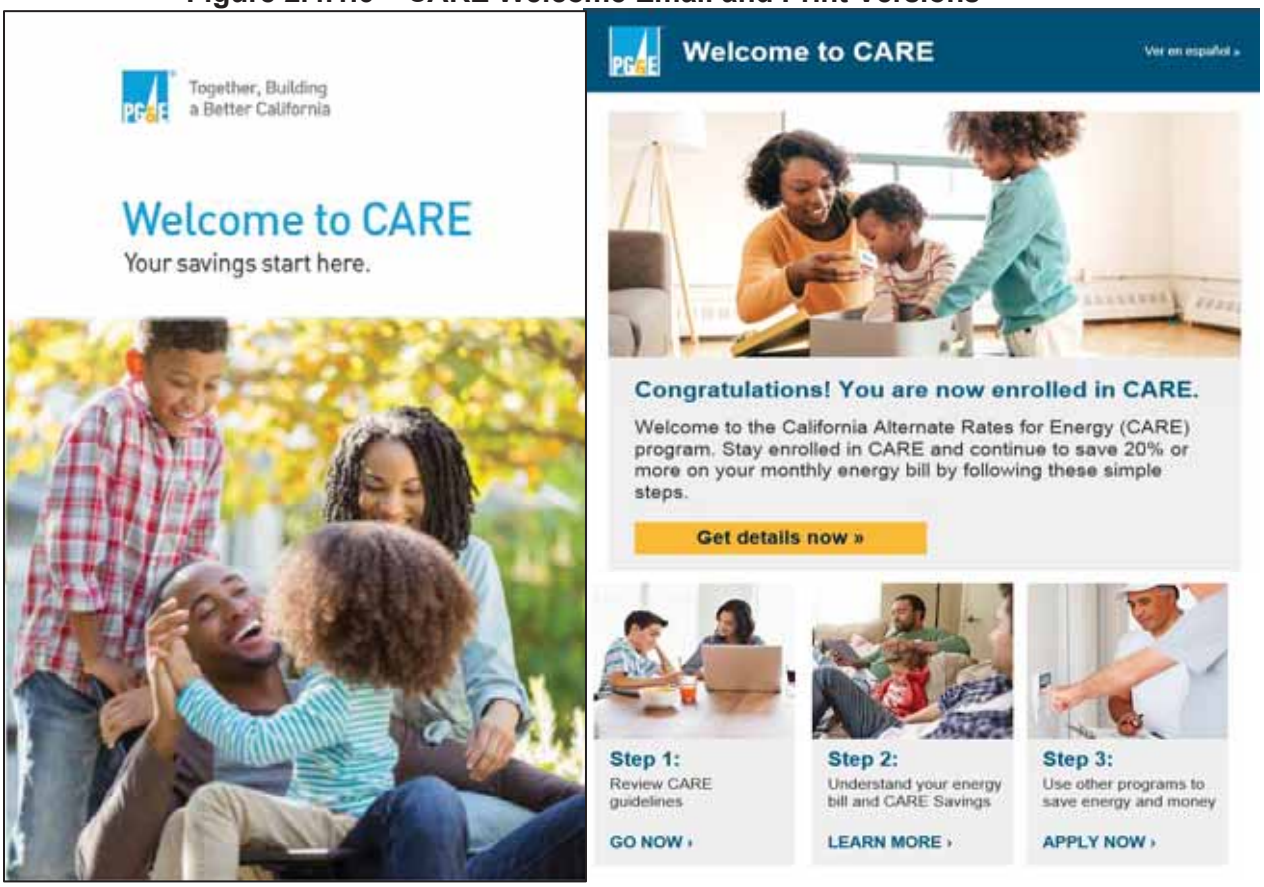
Digital Newsletters
Targeting approximately 1.3 million customers, the low income version of the digital newsletter continues to be an important vehicle to provide low income customers with information about programs, and low or no-cost tips and tools. The CARE and FERA programs were highlighted in four of the monthly newsletters. The February version featured FERA, while June, September, and December featured CARE and FERA. These digital newsletters were responsible for nearly 9,000 completed applications. In the other months, the digital newsletter provided energy savings tools and tips to help customers better manage their energy usage, as well as articles that alerted them to

important information like the California Earned Income Tax Credit (EITC) and the California Climate Credit that they would see on their bill.

CARE Retention Campaigns

As a continuation of an ongoing retention strategy, CARE Welcome Kits were sent as a bilingual English/Spanish direct mail or email to newly enrolled CARE customers, as shown in Figure 2.4.1.6. The revisions included a redesign to simplify the layout and copy so that the customer felt empowered to take the next step in their energy management journey. In addition to providing the customer's recertification date and the requirements to retain the CARE discount, the customer was encouraged to register for an online account and apply for ESA. A paper form that was pre-filled with customer account number and address, along with a reply envelope, was added to the direct mail version of the kit which resulted in the submission of approximately 7,900 ESA applications in 2019.

Figure 2.4.1.6 – CARE Welcome Email and Print Versions



PG&E continued its ongoing monthly automatic recertification efforts for customers who were approaching their two-year program expiration and had been identified as most likely eligible according to the CARE probability model.

An email was sent to notify these customers of their automatic recertification. The email provided the opportunity to opt-out if they no longer qualified. The auto-recertification email was updated in September to support goals of driving more low income customers to engage with energy savings opportunities by taking a Home Energy Checkup.

For customers outside of deciles 1-2 and not automatically recertified through PG&E's auto-enroll initiative, the PG&E outreach team continued to send email reminders to encourage customers to re-enroll in CARE as shown in Figure 2.4.1.7.

Figure 2.4.1.7 – CARE Auto-Recertify Email

PG&E Customer Service Office (CSO) Outreach Events
In 2019, PG&E participated in, and supported, approximately 250 community and local PG&E CSO outreach events to create awareness and provide education about the CARE program. These outreach events were staffed by CSRs that helped customers with questions, understanding their accounts, and providing education regarding CARE, ESA and other assistance programs. CSRs provided information on Medical Baseline, budget billing, large print bills, and in-language bills to give customers more information on our programs. This outreach effort resulted in 1,189 new CARE enrollments.

PG&E also partnered with ESA program contractors to conduct outreach at PG&E community events. In addition, PG&E partnered with ESA to set up ESA-only Lobby Assistance Days twice a month to promote the ESA program at the PG&E CSOs. Additionally, PG&E automatically enrolls customers who receive ESA treatment onto the CARE program.

PG&E partnered with a LifeLine Phone Provider (Assurance) to provide CARE information that promotes the low-income LifeLine program. The LifeLine provider assisted customers at PG&E CSO outreach events throughout PG&E's service area.

Community-Based Organizations (CBO) Outreach
PG&E's community engagement and outreach strategy focuses on building trusted community relationships and strategic partnerships with the goal of increasing awareness and enrollment in PG&E's assistance programs and energy management resources. Community outreach efforts can be a highly effective means to engage and gain the trust of customers who might otherwise not engage with PG&E. Complementing PG&E's multi-touch approach, community engagement efforts are critical to increasing access to assistance programs and energy education to our hard-to-reach customers. In 2019, PG&E initiated a Pay for Performance pilot to test whether CBOs might be a cost-effective way to generate CARE/FERA enrollments. The pilot had an annual goal of 850 new CARE/FERA enrollments per CBO. The first half of the pilot contract, $17,500, was

awarded up front. The award of the second half of the contract of an additional $17,500 for each CBO was contingent upon achieving 40% of the CARE/FERA new enrollment goal of 340 by June 30, 2019. In June 2019, the total enrolment of all nine CBOs fell short and came in under 7%, resulting in the campaign being discontinued due to low enrollment.

Selection Criteria
In 2019 PG&E identified and partnered with nine CBOs with culturally and linguistically specific abilities to provide outreach, enrollment and relevant support. The selection criteria for CBOs fell into more than one of the following categories: 1) current member of Communities of Color Advisory Group; 2) Faith Based Organization; 3) geographically located in an area of the population targeted; 4) frequency of outreach activities; 4) programs and services offered; and 5) languages served.

Training
PG&E provided relevant training and support to these CBOs to increase awareness around assistance programs and energy management tools. Assistance programs focused on: CARE, FERA, ESA and Medical Baseline new enrollments. PG&E also provided training on energy management tools focused on TOU rates/rate options, Bill Forecast Alerts and Home Energy Checkup. The outreach goal was to increase enrollment in Bill Forecast Alerts, Home Energy Checkup, ESA, Medical Baseline and CARE/FERA.

Locations and Events
PG&E targeted Alameda, Fresno, San Joaquin, Contra Costa, Kern, Santa Clara counties. Outreach event included presentations at community workshops; community events that include tabling at PG&E CSOs and/or Cooling Centers; fairs and festivals and open houses where CBOs engaged new and existing customers in one-on-one conversations; and door-to-door outreach campaigns.

Outreach Method
CBO outreach and education occurred through 59 community workshops, 148 events and 618 door-to-door campaigns resulting in an average of 4,055 customers touched and 3,699 customers educated in 6 counties. Combined efforts resulted in 197 customers enrolled in CARE.

Customer Feedback
CBOs collected customer feedback, which was largely positive. Generally, customers trust CBOs to provide relevant information. CBOs reported that customers were very satisfied with the outreach, and that they appreciated the educational activities PG&E offers, in like the online tools to used monitor their energy usage.

Despite the positive feedback from customers and CBOs about the pilot, ultimately the pilot was not cost-effective. The cost per successful customer acquisition was $787.50 per customer. As such, PG&E will continue to use its targeted marketing approaches to drive cost-effective customer acquisition.

2.4.2. Discuss the most effective outreach method, including a discussion of how success is measured.

Most outreach initiatives, including direct mail, email, and digital and print media, offer customers multiple ways to respond and apply for enrollment. In 2019, a significant majority (57%) of new CARE customer applications were submitted online. Because such a large percentage of customer applications were submitted online, this response channel can be considered the most effective outreach method in 2019. Convenience and accessibility are two factors that continue to drive the effectiveness of this enrollment channel. Applications are available in English, Spanish and Chinese on PG&E's website,

customers enrolled using one of two options: completion of a simple form which requires no registration or via Your Account, at www.pge.com, which requires user registration. Customers are able to enter the necessary household and income eligibility information, accept the declaration and submit the application electronically.

2.4.3. Discuss barriers to participation encountered during the reporting period and steps taken to mitigate them.

PG&E has found that barriers to participation in the CARE program include the fact that some customers are overwhelmed by financial troubles and left with little time and energy to apply for help. Some customers are unaware of all the program benefits, including the magnitude of the CARE discount, leading them to believe that it may not be worth their effort. Customers are often uncertain about program eligibility and recertification criteria or are incredulous that the discount has no conditions attached other than income qualification. Further, certain customers are fearful that PG&E will share their information with government agencies, particularly with the Immigration and Naturalization Service.

To overcome some of these barriers, PG&E developed mitigation tactics to better serve low income customers. These tactics included, but were not limited to:

- A multi-channel, multi-touch outreach approach that included automated calls, direct mail and email, as well as digital advertising
- Simplified messaging and design; use of iconography and step-by-step, color-aided instructions
- More enticing headers and subject lines, as well as outer envelope messaging
- Clarified qualification criteria, documentation needed and timing; increased urgency to comply
- A more empathetic and friendlier tone to marketing and communications materials

Though language did not pose a significant barrier to CARE enrollment in 2019, PG&E recognizes the diversity of customers in its service area and continues to offer CARE materials and services in multiple languages including English, Spanish, Chinese, Korean, Tagalog, Hmong, Russian, and Vietnamese.

2.4.4. Discuss how CARE customer data and other relevant program information is shared by the utility with other utilities sharing its service territory.

A portion of PG&E's service area is shared with other CPUC regulated energy and water utilities. PG&E has data sharing agreements with SoCalGas, SCE, California American Water, California Water Service, Del Oro Water, Golden State Water, Great Oaks Water, and San Jose Water to exchange listings of enrolled CARE customers that are identified in the shared service areas.

2.4.5. Discuss how CARE customer data and other relevant program information is shared within the utility, for example, between its ESA program and other appropriate low income programs.

A database of CARE customer contact information is uploaded for weekly distribution to PG&E’s ESA program providers to use for their outreach. Since November 1, 2005, when the ESA and CARE income guidelines were aligned at 200% of the Federal Poverty Guidelines, CARE automatically enrolls customers who have participated in the ESA program.

Since the CARE discount is noted in the customer information system, CSRs can see the CARE status of any customer calling PG&E's contact centers for assistance. This provides important information for CSRs to use when discussing other benefits and services that may be of assistance to the income qualified customer.

CARE features other financial assistance information on its applications. Each CARE application provides a brief description of other assistance programs available as well as contact numbers.

PG&E's CARE program integrated with other PG&E assistance programs to generate enrollments. CARE applications are on display and available to visitors at Cooling Centers. PG&E provides the CHANGES program contractors with training and collateral to help Limited English Proficient (LEP) customers enroll in CARE and other assistance programs. PG&E conducts monthly data exchanges with the ESA program to automatically enroll eligible customers in CARE. PG&E also runs monthly reports of customers receiving bill payments received through the CSD LIHEAP and PG&E's REACH programs and automatically enrolled eligible customers in CARE. These efforts resulted in 30,835 new enrollments.

2.4.6. Describe the efforts taken to reach and coordinate the CARE program with other related low income programs to reach eligible customers.

Throughout 2019, PG&E targeted existing CARE customers for outreach related to the ESA program. Because existing CARE customers were likely to qualify for the ESA program based on their income level, this was a way to ensure that the customer qualified via income guidelines. Other filters were then applied to determine those customers who would be most eligible for the ESA program.

Additionally, PG&E leveraged our Integrated Programs Brochure that integrates key low-income programs, services and savings tips in a step-by-step, easy-to-understand and succinct manner, which is available in seven languages.

PG&E automatically enrolls customers who receive LIHEAP and REACH assistance onto the CARE program. Furthermore, for the CARE automated phone calls, PG&E integrates information about the FERA and ESA programs. 27,539 ESA program participants were enrolled in the CARE program in 2019.

PG&E provides training to CBOs on income qualified programs in a holistic approach to simplify the customer journey. In 2019, PG&E trained CBOs on CARE/FERA, ESA, Solar Choice, rate options including TOU and medical baseline, community pilots for DR, Green Saver program, energy management tools, Community Wildfire Safety program, and scam prevention.

Additionally, PG&E continues to coordinate CARE, ESA and other low income outreach efforts to provide likely eligible customers with the knowledge and tools to access PG&E's services. Recent examples include an updated brochure that integrates key low-income programs, services and savings tips in a step-by-step, easy-to-understand and succinct manner that is available in seven languages. The goal with these and similar efforts moving forward is to help financially challenged customers manage their energy bills in a more holistic and sustainable way.

2.4.7. Describe the process for cross-referral of low income customers between the utility and the California Department of Community Services and Development (CSD). Describe how the utility's CARE customer discount information is provided to CSD for inclusion in its federal funds leveraging application. (Note: These agreements are limited to sharing 1-800 phone numbers with customers and providing CARE benefit information for the federal fiscal year, October 1 of the current year through September 30 of the subsequent year. There are no tracking mechanisms in place to determine how many customers contact the other programs or actually become enrolled in other program(s) as a result of these agreements.)

PG&E has provided assistance by leveraging federal funding through CSD's LIHEAP on an annual basis since 1989. The primary information provided to CSD is a monthly breakdown of the total number of participants (residential and sub-metered tenant counts) along with the total dollar amount of discount provided to that portion of the population during that period.

2.4.8. Discuss any recommendations to improve cost-effectiveness, processing of applications, or program delivery. Discuss methods investigated or implemented by the utility or third parties under contract to the utility to improve outreach and enrollment services to non-participating households in the prior year. Provide cost-effectiveness assessments, if available.

To improve the cost-effectiveness of outreach and enrollment services, PG&E focused on:

- Enhancing our targeting strategies with the goal of enrolling truly eligible customers
- Optimizing the multi-touch, multi-channel customer contact strategy with a three-touch strategy
- Using more cost-effective outreach channels, such as automated phone calls and email
- Driving customers to the online enrollment form for quicker processing and lower operational costs
- Testing different messaging and creative versions in market (as opposed to commissioning additional research), identifying quick enhancement opportunities and implementing learnings in real time for optimized results
- Recertifying automatically customers who are most likely qualified and fall within deciles 1-2 of the CARE Probability Model
- Developing more communications 30 days prior to customers falling off the program to improve customer experience and reduce operational and outreach costs
- Emailing CARE and FERA customers who have selected email as preferred method of communication in English and/or Spanish that they have been approved.
- Partnering with specialized CSRs to make additional touchpoint (phone calls) with 1) customers who submit incomplete enrollments and 2) customers selected for high usage to help them understand document requirements to

ensure CARE discount is not lost. Data to measure success will be available in 2020.

- Improving the verification process for High Usage Customers. As of September 2019, High Usage Customers are not required to submit Internal Revenue Service (IRS) documentation. Customers can verify with standard income documentation and this has allowed them to complete the verification documentation process quicker since they do not have to wait for the IRS to send the documentation in order to maintain the discount.

2.5. Processing CARE Applications

2.5.1. Describe the utility's process for recertifying sub-metered tenants of master-meter customers.

PG&E mails the recertification package to sub-metered tenants 90 days prior to their CARE expiration date. A reminder letter is also mailed 30 days prior to their CARE expiration date. Tenants are removed from the CARE rate if they do not respond by their due date.[51]

2.5.2. Describe any contracts the utility has with third parties to conduct certification, recertification and/or verification on the utility's behalf. Describe how these third-party efforts compare to the utility's efforts in comparable customer segments, such as hard-to-reach or under-served. Include comparisons of effectiveness and cost-effectiveness of comparable customer segments, if available.

PG&E did not have any contracts with third parties to conduct certification, recertification, and/or verification on PG&E's behalf in 2019.

2.6. Program Management

2.6.1. Discuss issues and/or events that significantly affected program management in the reporting period and how these were addressed.

PG&E discusses issues and events that affected program management below.

Residential Rates
Rate increases impact CARE customers disproportionately, significantly affecting program management through increased questions and complaints about higher bills. PG&E addressed this issue through its Residential Rate Reform outreach. The outreach strategies included helping customers to understand the changes that will impact their current rates and that PG&E has programs, tips, and tools available to help, including new TOU rate plans. PG&E worked with nonprofits to communicate these changes and available programs to customers. PG&E encouraged customers to use the resources available to them online at www.pge.com and MyEnergy.

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[51] D.08-11-031, OP 100 authorized PG&E to change the certification period for sub-metered tenants from one year to two years (four years for fixed income).

Post-Enrollment Verification (PEV)
Both the High Usage and Standard CARE PEV processes continued to affect CARE program management significantly in 2019. These processes and their impacts on program management are discussed below.

The CARE and FERA programs provided support for those customers whose homes were destroyed in the 2019 wildfires, winter storms and earthquakes in compliance with D.19-07-015. Impacted customers were protected at least through the end of the 12-month period in which these protections applied and potentially longer, as warranted. The emergency disaster relief program was designed to ensure that California utility customers who experienced a housing or financial crisis due to a disaster kept vital utility services and received financial support in the wake of a disaster.

Below are additional details on CARE PEVs put in place in 2019.

CARE Program Post-Enrollment Verification Freezes			
Date of Proclamation	**Disaster Name**	**Affected Counties**	**Date when Protection Ends**
April 2019	Wildfires and Winter Storms	Amador, Butte, Calaveras, Colusa, El Dorado, Glenn, Humboldt, Lake, Marin, Mariposa, Mendocino, Monterey, Napa, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Shasta, Solano, Sonoma, Tehama, Tuolumne, Trinity and Yolo	May 2020
June 2019	Ridgecrest Earthquake	Kern and San Bernardino	July 2020
November 2018	Camp Wildfire	Paradise	December 2020
October 2019	Kincade Wildfire	Sonoma	November 2020

High Usage Post-Enrollment Verification (PEV) Process[52]
PG&E continued the High Usage PEV process in 2019. CARE customers with usage above 400% of baseline in the previously monthly billing cycle were selected to complete the PEV documentation requirements. PG&E's High Usage PEV results for 2019 are reported in CARE Table 13.

[52] In compliance with D.16-11-022, OP 87, the IOUs aligned their CARE High Usage Appeal Processes

Standard PEV Process

Using its Long-Term Model framework[53], PG&E's 2019 annual PEV rate was 4.6% (1.5% high usage + 1.8% model + 1.3% random selection) and applied to all enrolled CARE customers (OP 91), except for those customers in counties included in the Emergency Consumer Protection Plan.[54]

Below is a breakdown of the 2019 Standard PEV results by enrollment type (OP 94d-e).

2019 PEV Results by Enrollment Type		
Status[1]	**Income**	**Categorical**
Approved	28.6%	32.9%
Over Income	4.9%	3.3%
Request Drop	1.1%	0.7%
No Response	65.4%	63.2%
[1] Status as of March 31, 2020.		

PG&E's overall 2019 PEV results are reported in CARE Tables 3A (Model) and 3B (High Usage) (OP 94a-c).

PG&E made significant improvements in PEV with the implementation of the CARE probability model and high usage requirements. Customers selected for PEV by the model are 68% more likely than those randomly selected to be verified as ineligible (deemed over income or requested removal from the program).

The annual CARE subsidy was nearly $639 million in 2019. This is an 18% decrease from the highest annual CARE subsidy of $776 million in 2011. The high usage requirements and Long-Term Model will continue to be instrumental in identifying customers who are likely not qualified, thus reducing the subsidy, while maintaining ease of enrollment for most customers who are truly in need of the discount.

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53 The Long-Term Model framework, including optimal PEV rate, was proposed in AL 3410-G/4279-E filed on September 3, 2013 (OP 95), and approved by the ED effective October 3, 2013. The Long-Term Model was implemented in 2014 and remained in effect throughout 2019. The model is designed to overlook potential non-responders who look eligible through their PG&E transactions but are also likely to not respond to the PEV request. This is achieved by an algorithm that looks at the degree to which third-party data overlays are missing, indicating a customer has short tenure and may be more transient and less established. The model targets customers for PEV who are likely ineligible and would be denied, regardless of likelihood to respond. The Standard PEV non-response rate of customers selected by the model has decreased as a result of this enhancement.

54 D.18-08-004

2.7. Pilots

2.7.1. Community Help and Awareness of Natural Gas and Electricity Services (CHANGES)

The CHANGES pilot program provides funding to CBOs to assist LEP customers with energy education and billing issues.

In 2019, the CHANGES program continued to provide outreach, education, and bill issue assistance on natural gas and electricity bills and services to LEP customers in the language of their choice through a statewide network of CBOs. The IOUs continued to work with CHANGES implementers to maintain reporting procedures to evaluate individual cases and group workshops/presentations conducted by CBOs.[55]

In addition, CHANGES CBOs continued to assist LEP customers on a variety of issues, including helping customers enroll in the CARE and ESA programs, providing EE education and bill education, setting up a PG&E account/payment plan, obtaining LIHEAP assistance and help with avoiding service disconnection. While PG&E CSRs provide in-language support through its Contact Centers' third-party affiliates, the CHANGES program provided LEP customers with an alternative by getting help with their PG&E billing issues through local, trusted CBOs.

The CPUC's Consumer Service Information Division (CSID) and PG&E have been working together to improve the coordination between CHANGES CBOs and PG&E CSRs. In 2014, in coordination with CSID, PG&E modified its customer authorization form (79-1095) to enable a CHANGES CBO representative to speak directly to PG&E CSRs to review a customer's energy bills and set up a payment plan on a customer's behalf. In 2019, PG&E continued the use of this authorization form.

In response to constructive feedback from CHANGES CBOs and the CPUC on the CHANGES toll-free number experience, PG&E updated its routing system to connect CHANGES CBOs to PG&E Senior Service Representatives (SSRs). The streamlined approach to connect CHANGES CBOs to trained SSRs helped establish recognition of CHANGES CBOs' purpose and be more responsive to customers' time-sensitive energy billing/service needs.

In 2019, consumer education was provided to 13,520[56] consumers through the CHANGES program. Education sessions were held in a mix of one-on-one and group sessions. Education materials are available as fact sheets on the CPUC Website: http://consumers.cpuc.ca.gov/team_and_changes/.

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[55] CHANGES data pertaining to program expenditures, one-on-one and group customer assistance sessions is collected from the CBOs and reported in the monthly CARE/ESA report in CARE Tables 9, 10 and 11.

[56] Data in document was provided from the December 2019 CHANGES monthly report year-to-date tables by Self-Help for the Elderly and Milestone Consulting LLC, who administers the CHANGES program

2019 CHANGES Disputes Resolution	
Add Level Pay Plan	0
Assisted with CARE Recertification/Audit	27
Changed 3rd party Company / Gas	261
Changed 3rd party Company / Electric	250
Consumer Education Only (must be pre-approved)	0
Medical Baseline Application	49
Enroll in Energy Assistance Programs	141
Request Meter Service or Testing	5
Request Bill Adjustment	32
Scheduled Service Visit	5
Schedule Energy Audit	0
Payment Extension	71
Payment Plan	130
Solar	5
Stop Disconnection	179
TOU	5
Wildfire Related Issue	0
TOTAL	**1160**

Note: The total number of services may exceed the total number of cases because some cases will include more than one service provided. Support for dispute resolutions was provided in the following languages: Cambodian, Cantonese, Dari, English, Hmong, Igbo, Korean, Lao, Mandarin, Pashto, Portuguese, Portuguese – Brazilian, Punjabi, Spanish, Swahili, Tagalog, Urdu, Vietnamese

2019 CHANGES Needs Assistance	
Add Level Pay Plan	0
Assisted with CARE Recertification/Audit	25
Assisted with Changes to Account	148
Energy Efficiency Tool	1
Assisted High-Energy User with CARE Doc Submission	1
Assisted with Reconnection	7
Billing Language Changed	75
CARE Enrollment	26
Consumer Education Only	0
Electricity Aggregation	86
Energy Alerts	0
Energy Assistance Fund (SCE)	0
Energy Assistance Fund (PG&E)	1
Enrolled in Demand Response Programs (DRP)	0
ESAP	69
Gas Assistance Fund (SCG)	0
HEAP	450
Medical Baseline	97
Neighbor to Neighbor (SDG&E)	0
REACH	44
Reported Safety Problem	1
Reported Scam	0
Set Up 3rd Party Notification	4
Set Up New Account	21
Payment Extension	48
Payment Plan	104
Wildfire Related Issue	0
TOTAL	**1208**

Note: Support for “needs assistance” was provided in the following languages: Arabic, Amharic, American Sign Language, Cambodian, Cantonese, Cebuano, Dari, English, English - Native American, Farsi, Hindi, Hmong, Japanese, Karen, Korean, Lao, Portuguese, Spanish, Swahili, Tagalog, Urdu, Vietnamese

3. CARE Expansion Program

3.1. Participant Information

3.1.1. Provide the total number of residential and/or commercial facilities by month, by energy source for the reporting period.

See CARE-Table 12 – CARE Expansion Program.

3.1.1.1. State the total number of residents (excluding caregivers) for residential facilities, and for commercial facilities, by energy source, at year-end.

There were approximately 80,499 tenants residing within CARE expansion program qualified facilities receiving the CARE discount by December 31, 2019. This information is not available by energy source. The resulting numbers are representative of the total number of residents housed in all facilities, both residential and commercial, and for both energy commodities.

3.2. Usage Information

3.2.1. Provide the average monthly usage by energy source per residential facility and per commercial facility.

PG&E provides its average monthly usage by energy source in CARE-Table 12 – CARE Expansion Program.

3.3. Program Costs

3.3.1. Administrative Cost (Show the CARE expansion program's administrative cost by category)

The CARE expansion program's administrative cost was reported as part of the overall program administrative expenses. See CARE-Table 1 – Overall Program Expenses.

3.3.1.1. Discount Information

Following is the total annual discount, by energy source, for the CARE expansion program:

Electric:	$7,818,799
Gas:	$7,435,662
Total:	$9,254,462

3.3.1.2. State the average annual CARE discount received per residential facility by energy source.

Electric:	$546.96
Gas:	$188.04

3.3.1.3. State the average annual CARE discount received per commercial facility by energy source.

Electric:	$6,139.40
Gas:	$1,663.12

3.4. Outreach – CARE Expansion

3.4.1. Discuss utility outreach activities and those undertaken by third parties on the utility's behalf.

In 2019, PG&E had 39 CBOs who were CARE COCs. Each year, the CARE COCs are trained on all income qualified programs available through PG&E. These CBOs are encouraged to use a holistic approach on educating their clients on all customer assistance programs available to assist in reducing energy bills.

Many of the local community organizations represented in the above two groups do participate in local community events and PG&E payment office promotions where income qualified programs are promoted. In addition, PG&E reaches out to and supports faith-based groups who host local events to educate their members on financial assistance programs.

3.4.2. Discuss each of the following:

3.4.2.1. Discuss the most effective outreach method, including a discussion of how success is measured.

PG&E finds direct marketing, and partnerships with CBOs, and targeted outreach to group living facilities, agricultural employee housing, and other eligible nonprofit organizations as the most effective outreach method. PG&E measures success by the number of enrolled CARE participants as compared to the percent of likely eligible CARE customers.

3.4.2.2. Discuss how the CARE facility data and relevant program information is shared by the utility with other utilities sharing service territory.

PG&E does not currently exchange CARE facility data or expansion program information with other utilities in the shared service areas.

3.4.2.3. Discuss barriers to participation encountered in the prior year and steps taken to mitigate these, if feasible, or not, if infeasible.

Group Living Facilities: The certification period for nonprofit group living facilities is two years. At the end of the two-year period, PG&E mails a recertification packet to the listed primary contact. Due to an organization's frequent personnel changes, current staff is not always aware of the CARE program or the recertification process. As a result, approximately half of the organizations do not recertify though they still qualify for the discount. To address this barrier, PG&E proactively calls customers to remind them to recertify, answer any questions they might have and guide them through the recertification enrollment process.

Agricultural Employee Housing: For the agricultural employee housing facilities, PG&E identified two barriers: 1) the lack of understanding the CARE program criteria; and 2) the perception of inconvenient paperwork. For example, in some cases, facility owners and managers were unsure about the type of permit requirements. Some facility owners and managers believe that their facility would not qualify because the company was a business, or the tenants do not pay for utilities, and/or tenants do not live in the housing facility year-round. PG&E overcame these barriers by working one-on-one with the facility owners and managers to ensure they were successfully enrolled.

Nonprofits: Throughout 2019, PG&E continued to receive phone calls asking for clarification about the definition of a satellite facility. Satellite facilities are facilities/offices associated with nonprofit headquarters that might be located in a different city. Agencies were requesting clarification if facilities who were associated with their headquarters but might be physically in other cities still quality for the CARE discount. PG&E also received calls asking for clarification from certain nonprofits like homeless shelters and hospices about specific requirements for hours of operation and facility size. Based on customer feedback, PG&E revised its nonprofit application to provide more clarification on these requirements and worked with facility owners and managers to answer each of their questions.

3.4.3. Discuss any recommendations to improve the cost-effectiveness, processing of applications, or program delivery. Discuss methods investigated or implemented by the utility or third parties on the utility's behalf to improve outreach and enrollment services to non-participating facilities in the prior year. Provide cost-effectiveness assessments, if available.

PG&E believes that a four-year recertification period for not-for-profit organizations and agricultural employee housing facilities would be more prudent in terms of reduced processing time, reduced paper and postage, and increased customer satisfaction. This was proposed in 2021-2026 application cycle.

3.5. Program Management

3.5.1. Discuss issues and/or events that significantly affected program management in the reporting period and how these were addressed.

PG&E did not encounter any issues and/or events that significantly affected the CARE expansion program management in 2019.

4. Fund Shifting

4.1.1. Report ESA program fund shifting activity that falls within rules laid out in Section 6.2 of D.12-08-044.

The ESA total program expenses in 2019 did not exceed the total authorized budget. PG&E fund shifted among EE subcategories to cover the overspend in the HVAC gas, miscellaneous electric, in-home education for electric/gas and appliance/gas subcategories totaling $3,903,535 in the funding cycle 2017-2020.[57] ESA Table 12 – Fund Shifting summarizes the shift between measures. Table 12A – Fund Shifting summarizes the shift between measures within the 2009-2016 Unspent Funds of $3,500,000 from Domestic Hot Water gas to HVAC gas.

4.1.2. Report CARE fund shifting activity that falls within rules laid out in Section 6.2 of D.12-08-044.

In 2019, the total CARE program administrative expenses did not exceed the overall authorized budget. PG&E shifted $38,022 from the Regulatory Compliance category to the CPUC ED category.[58]

4.1.3. Was there any ESA program or CARE fund shifting activity that occurred that falls OUTSIDE the rules laid out in Section 6.2 of D.12-08-044?

There was no ESA or CARE program fund shifting activity that occurred in 2019 that fell outside of the fund shifting guidelines in D.12-08-044, as updated in D.16-11-022 and D.17-12-009.

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[57] In compliance with D.12-08-044 (wherein the “Utilities are permitted to shift funds from one year to another within the 2012-2014 cycle without prior approval”) and D.17-12-009

[58] In compliance with D.12 08 04, OP 135(c) of 4, authorized CARE fund shifting between categories in the same manner as the 2009-2011 budget cycle

5. Commonly Used Acronyms

AB	Assembly Bill
AL	Advice Letter
BAMBE	Bay Area Multifamily Building Enhancements
BayREN	Bay Regional Energy Network
CAM	Common Area Measure
CARE	California Alternate Rates for Energy
CBO	Community-Based Organization
CEESP	California Energy Efficiency Strategic Plan
CEWG	Cost-Effectiveness Working Group
CFL	Compact Fluorescent Lamp
CHANGES	Community Help and Awareness of Natural Gas and Electric Services Program
CMFNH	California Multifamily New Homes
COC	Community Outreach Contractor
CPUC	California Public Utilities Commission
CSD	California Department of Community Services and Development
CSI	California Solar Initiative
CSID	Consumer Service Information Division
CSO	Customer Service Office
D.	Decision
DR	Demand Response
DSM	Demand-Side Management
ED	Energy Division
EE	Energy Efficiency
ESA	Energy Savings Assistance
ETC	Energy Training Center
EUI	Energy Use Intensity
FERA	Family Electric Rate Assistance
FPG	Federal Poverty Guidelines
GRC	General Rate Case
HER	Home Energy Report
HHS	Health and Human Services
HOPPS	High Opportunity Projects and Programs
HVAC	Heating, Ventilation, and Air Conditioning
IOU	Investor-Owned Utility

IRS	Internal Revenue Service
kW	Kilowatt
kWh	Kilowatt Hour
LED	Light-Emitting Diode
LEP	Limited English Proficient
LIHEAP	Low Income Home Energy Assistance Program
LINA	Low Income Needs Assessment
LIWP	Low Income Weatherization Program
MCWG	Mid-Cycle Working Group
ME&O	Marketing, Education and Outreach
M&O	Marketing and Outreach
MF	Multifamily
MFWG	Multifamily Working Group
MHP	Mobile Home Park
MID	Modesto Irrigation District
MIDI	Moderate Income Direct Install
MUP	Multifamily Upgrade Program
mWh	Megawatt Hour
NEBs	Non-Energy Benefits
NGAT	Natural Gas Appliance Testing
OP	Ordering Paragraph
P&G	Potential and Goals
PCT	Programmable Communicating Thermostat
PEV	Post-Enrollment Verification
PG&E	Pacific Gas & Electric Company
PSPS	Public Safety Power Shutoff
PY	Program Year
Q1	First Quarter
Q2	Second Quarter
Q3	Third Quarter
Q4	Fourth Quarter
REACH	Relief for Energy Assistance through Community Help
REU	Redding Electric Utility
SASH	Single Family Affordable Solar Homes
SERA	Skumatz Economic Research Associates, Inc.
SCE	Southern California Edison

SDG&E	San Diego Gas & Electric Company
SGIP	Self-Generation Incentive Program
SoCalGas	Southern California Gas Company
SPOC	Single Point Of Contact
SSR	Senior Service Representative
TOU	Time-of-Use

6. Appendix A: 2019 ESA and CARE Program Compliance and Activities

No.	ESA-CARE Activity	CPUC Directive	Directive Reference	Action Required	Completed Date
1	PG&E had no IT upgrades for CARE in 2019.	D.17-12-009	OP 93	For the CARE Program: Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and Southern California Gas Company shall coordinate their information technology upgrades with any planned Information Technology (IT) in other proceedings, including the new energy efficiency financing pilot programs directed in Decision 13 09 044, to leverage economies of scale and reduce overall IT upgrade costs.	1/2/2019
2	Home Energy Reports were sent to over 1.8 million PG&E customers. Of these nearly 500,000 are CARE customers. See AR pp.14, 16, 26, and 58.	D.17-12-009	OP 105	For 2017, Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and Southern California Gas Company shall have 10% of all California Alternate Rates for Energy Program customers participate in the Home Energy Report effort. For 2018, the goal is that 15% of all California Alternate Rates for Energy Program customers participate in the Home Energy Report effort. Higher usage customers are to be targeted and prioritized for participation in the program.	1/8/2019
3	PG&E removed measure caps as directed in D.16-11-022 and added HE Clothes Washers into its program (see Table 2). Water coordination was reported in its Mid-Cycle Advice Letters filed in 2018 and authorized in January 2019, and in this 2019 ESA/CARE Annual Report in Section 1.7.4.	D.17-12-009	OP 28, p.461-463	28. The (four large Investor Owned Utilities) shall take the following actions in response California's historic and devastating drought: (a) Remove any "caps" on the number of faucet aerators and low flow showerheads allowed per household. (b) Consider installation of thermostatic tub spouts as they become commercially available. (c) PG&E may include high efficiency clothes washers into its ESA Program, in accordance with the measure cost effectiveness. (e) PG&E, SCE, and SDG&E are to work together to provide a similar kit (toilet leak kit), to integrate the offering into the ESAP Energy Education component, and to bulk procure these low cost items. IOUs should partner with water agencies or companies (wholesalers or retailers) to fund these measures and should only use ESAP Marketing and Outreach Budgets as a backstop. The IOUs should document their coordination efforts in their annual reports. (f) Should water leveraging activities drive additional and unforeseen costs, the IOUs are authorized to file a PFM for cost recovery. The IOUs may also propose water energy measures via a PFM and should document these costs separately in their annual reports. (g) PG&E should set up coordination programs with the largest water wholesalers and retailers in their service territories. As part of these water energy programs, the IOUs may propose cold water measures as ESAP measures, provided that these proposals include water energy calculator results. Proposals must consider the relative magnitudes of the energy and water benefits, and include a good faith effort to co fund or leverage these offerings with the identified water wholesalers, in light of the magnitude of benefits associated with each commodity. However, non leveraged water energy measures shall be considered, along with their water energy calculator CE results, if no partner agency or company can be found. Water energy programs should be proposed via a Tier 2 Advice Letter.	1/14/2019
4	PG&E reported on CHANGES in all ESA/CARE Monthly Reports in 2019 (see CARE Tables 9-11) and in this 2019 AR (see Section 2.7.1).	D.15-12-047	OP 28	Pacific Gas and Electric Company, Southern California Edison, Southern California Gas Company, and San Diego Gas & Electric Company shall include the Community Help and Awareness of Natural Gas and Electricity Services bill issue assistance and education workshop materials and attendance statistics in their monthly CARE reports until long-term funding is established from the Commission's budget.	1/18/2019
5	PG&E participated in Low-Income Housing Tax Credit (LIHTC) Workshops in January 2019.	D.17-12-009	OP 38	Pacific Gas and Electric Company and Southern California Edison Company, shall join San Diego Gas & Electric Company and Southern California Gas Company in participating in California Tax Credit Allocation Committee noticed workshops, and network with potential project applicants, including multi-family building developers and building owners, to encourage their participation in the Energy Savings Assistance Program and all applicable common area energy efficiency programs.	1/23/2019
6	PG&E completed LifeLine/CARE-ESA leads generation data shares on Jan.15 and July 15, 2019.	NSDL	p.13	PG&E will share data with the CPUC Communications Division twice a year or biannually on January 15th and July 15th. The first data sharing occurrence will be on January 15th, 2019.	1/31/2019
7	See AR ESA Tables 1A and 12 and CARE Table 1. And documented in PG&E Regulatory Accounting Document #17-01-08rev2	NSDL	p.12	PG&E also estimates $2M, $1M for CARE and $1M for ESA, will be needed for associated internal IT start-up costs. PG&E does not request additional CARE budget for this work as the current total authorized CARE budget is sufficient. PG&E is able to shift needed funds from the CARE Outreach budget category to CARE Regulatory Compliance budget category. For ESA, PG&E may use remaining 2009 through 2016 unspent funding, allocated to the Regulatory Compliance budget category as specified above to cover these costs. These requests are approved.	2/1/2019
8	See AR ESA Tables 1A and 12. And documented in PG&E Regulatory Accounting Document #17-01-08rev2	NSDL	p.13	PG&E's budget, outlined below in Table 6 [see disposition for Table 6], has been adjusted to align with modifications adopted in this disposition for ESA. PG&E's requests to shift and use unallocated 2009-2016 ESA Unspent Funds to cover a) updated forecasts and assumptions, b) addition of new measures, and c) the refinement of existing measures is approved.	2/1/2019
9	See AR ESA Tables 1A and 12 re Mid-Cycle budget updates. And documented in PG&E Regulatory Accounting Document #17-01-08rev2	NSDL	p.13	PG&E also initially estimated an unspent fund balance of approximately $1.5M which it requested to refund to rate payers. We authorize PG&E to utilize these funds as necessary to accommodate the 10% increase in First Time treatments discussed in section C.	2/1/2019
10	Documented in PG&E Regulatory Accounting Document #17-01-08rev2. PG&E filed AL 5661-E on October 15, 2019 which became effective on January 1, 2020.	NSDL	p.13	Otherwise pursuant to D.16-11-022, all current 2009-2016 accumulated ESA carry-over funds, totaling approximately $56M, shall be utilized to offset collections that would have otherwise been required in this program cycle. These funds shall not be returned to ratepayers, unless directed by the Commission.	2/1/2019
11	Documented in PG&E Regulatory Accounting Document #17-01-08rev2	NSDL	p.14	For 2018, PG&E's allocation will change from 52 percent electric/48 percent gas to 58 percent electric/42 percent gas; and for 2019 and 2020, PG&E's allocation will change from 52 percent electric/42 percent gas to 69.5 percent electric/30.5 percent gas. This request is approved however Energy Division reserves the right to revisit if issues arise as a result of these modified allocations.	2/1/2019
12	See AR Section 2.2 and 2.4, for example: pp.52, 55, 58, 59. And documented in PG&E Regulatory Accounting Document #17-01-08rev2	NSDL	p.15	PG&E's plan to use previously authorized CARE marketing funds on additional marketing and outreach efforts in 2018 through 2020 to increase FERA enrollment is approved.	2/1/2019

No.	ESA-CARE Activity	CPUC Directive	Directive Reference	Action Required	Completed Date
13	PG&E re-evaluated its request for pool pumps and did not pursue this measure for this cycle.	NSDL	p.5	PG&E's budget request for approximately $56M for pool pumps is not adequately justified and is therefore denied. If PG&E is still interested in pursuing this measure, it shall do so via Tier 2 Advice Letter providing adequate justification and accurate cost analysis within 30 days of this disposition.	2/4/2019
14	PG&E did not request to adjust the total vendor cost.	NSDL	p.12	PG&E may also request modification to the total Statewide End-Use Load Profile vendor cost if the estimated total vendor cost of $2.2M is adjusted by a Tier 2 Advice Letter within 30 days of this disposition.	2/4/2019
15	PG&E initiated the cross promotional activities in 2019, reported in Section 1.3.2 and 2.6.1 of the 2019 Annual Report.	D.17-12-009	OP 88, p.485-486	For the ESA Program: Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and Southern California Gas Company (the four large Investor Owned Utilities) shall distribute California Alternate Rates for Energy (CARE) Program and Energy Savings Assistance (ESA) Program marketing material to the California LifeLine administrator or providers, stores and kiosks. The IOUs will assess each California Life Line service provider's willingness and administrative viability (as determined by the CARE/ESA program) to participate in the CARE Capitation Program and can enroll all willing and qualified vendors, including California LifeLine providers, in the CARE Capitation Program. The CARE Program will fund the costs associated with a California LifeLine provider's participation in the CARE Capitation Program. This directive includes Veterans Affairs Supportive Housing program partners, IRS Volunteer Income Tax Assistance providers and Covered California outreach and enrollment agencies. Enrollments driven through these efforts should be tracked (through unique CARE Program and ESA Program URLs, toll free numbers, or other methods) and reported in the four large Investor Owned Utilities' annual CARE Program and ESA Program reports.	4/8/2019
16	PG&E initiated the cross promotional activities in 2019, reported in Section 1.3.2 and 2.6.1 of the 2019 Annual Report.	D.17-12-009	OP 89	For the ESA Program: San Diego Gas & Electric Company's request for funding of its Third Party Outreach and Enrollment cross promotional activities is approved, to be split between the California Alternate Rates for Energy Program and Energy Savings Assistance Program Administrative line items. This budget allocation is also adopted and directed for Pacific Gas and Electric Company, Southern California Edison Company, and Southern California Gas Company.	4/8/2019
17	PG&E reported on the CSD Low Income Weatherization Program on page 10 of the 2019 ESA/CARE Annual Report.	D.17-12-009	OP 41c, p.470	In order to leverage Department of Community Services and Development (CSD) new Low Income Weatherization Program dollars and energy efficiency upgrades, Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and Southern California Gas Company track and report in their annual reports the funding for leveraging with the Low Income Weatherization Program multifamily effort. This effort will mirror the leveraging efforts with the CSD, California Energy Commission and California Department of Water Resources for Drought Mitigation.	4/26/2019
18	PG&E reported on the CSD Low Income Weatherization Program on page 10 of the 2019 ESA/CARE Annual Report.	D.17-12-009	OP 41d, p.470	Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, and Southern California Gas Company (four large Investor Owned Utilities) shall track and report in their annual reports the funding of only measures currently offered by the Energy Savings Assistance (ESA) Program and approved for multi-family households. Using projected installation rates for these measures, coupled with the four large Investor Owned Utilities' costs for both labor and the measures, the four large Investor Owned Utilities' are to work with the Department of Community Services and Development (CSD) to calculate the projected funding level for this effort, with the goal of funding the CSD's Low Income Weatherization Program efforts for those measures provided by the ESA Program, preserving the remaining CSD's funding for use to install central systems and common area measures not provided by the ESA Program.	4/26/2019
19	PG&E tracks in the annual report of the reporting on the numbers of "first touches" versus "go backs," the energy savings resulting from the treatment from the "go back" and additional measures to determine what percentage of the utility's energy savings target is a result from a "go back" versus a "first touch" for a customer. See ESA Table 2.	D.17-12-009	ESA Reporting	Text p.69: We direct the utilities to track in its reporting how many visits are "first touches" (households that have not received ESA treatment) versus "go backs." The utilities should track the number of "go backs," the energy savings resulting from the treatment from the "go back" and additional measures to determine what percentage of the utility's energy savings target (as discussed above) is a result from a "go back" versus a "first touch" for a customer.	5/1/2019
20	PG&E's cooling center budget did not exceed 15% of its CARE budget. PG&E shifted no funds for cooling center transportations purposes in 2019. PG&E's 2019 Cooling Center Report was filed on December 20, 2019.	D.17-12-009	OP 120 and text-342-343	Cooling Centers: Allowing CARE to support transportation to Cooling Centers as a pilot before Cooling Center expenditures are considered in the GRC will give the Commission data to examine the effect of transportation, and the combination of transportation and education, on cooling center participation and ESA enrollment by eligible low-income customers. We allow the IOUs to fund cooling center transportation costs under the currently-authorized CARE fund shifting rules as appropriate. Additionally, the Commission establishes a maximum amount of individual authorized cooling center utility budgets that is not to exceed 15% of each budget. The IOUs are permitted to shift CARE funds in the same manner as they did in the 2012-2014 budget cycle. For the purpose of transportation expenses, fund shifting is limited to 15%, and all fund shifting activity must be reported in IOUs' monthly and annual reports.	5/1/2019
21	ESA energy savings goal potential was included in the 2019 Potential & Goals Study using funding allocated for the 2017 study (which was too far along to include assessment of ESA). PG&E provided comments on the May 2019 draft, and used relevant results in its November 4, 2019 Application filing.	D.17-12-009	OP 8. p.455-456	Staff of the Commission's Energy Division shall work with the 2017 Energy Efficiency Potential Study consultant to provide an analysis and determination of the Energy Savings Assistance Program energy savings goal potential. The budget for this work is not to exceed $300,000, and shall be funded by the 2017-2020 Energy Savings Program budgets. Pacific Gas and Electric Company shall fund 30% of the study.	5/1/2019

No.	ESA-CARE Activity	CPUC Directive	Directive Reference	Action Required	Completed Date
22	PG&E requested to use unspent uncommitted 2009-2016 funding in its Conforming and Mid-Cycle ALs in 2017 and 2018. See AR ESA Tables 1A and 12. And documented in PG&E Regulatory Accounting Document #17-01-08rev2.	Res.G-3531	OP 6	Any remaining unspent funds not authorized in this Resolution shall be utilized to fund program and policy objectives adopted in D.16-11-022, and to offset the program collections that would otherwise have been required. These funds shall be used to achieve ESA program and policy objectives and are not to be returned to ratepayers at this time.	5/1/2019
23	PG&E reported on the Broadband in section 1.16.2 of the 2019 ESA/CARE Annual Report.	D.17-12-009	OP 42	Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and Southern California Gas Company (four large Investor Owned Utilities) shall investigate coordination with the California Advanced Services Fund's new Broadband Public Housing Account. These coordination efforts shall be described in each of the four large Investor Owned Utilities' annual reports.	5/9/2019
24	PG&E retained and expanded the room AC replacement offering to climate zones 11 and 12 through PY 2020 to mitigate potential health comfort and safety issues in these areas.	NSDL	p.6	Energy Division approved retaining room AC replacement and supports expanding the offering to climate zones 11 and 12 through PY 2020 to mitigate potential health comfort and safety issues in these areas.	6/26/2019
25	PG&E filed its ESA-CARE Application on November 04, 2019, in accordance with D.19-06-022 directives	D.17-12-009	OP 151	Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and Southern California Gas Company shall file their next California Alternate Rates for Energy Program/Energy Savings Assistance Program applications no later than June 1, 2019.	6/28/2019
26	PG&E uses a SPOC model, as reported in this 2019 AR (see Section 1.8.2). The non-deed restricted analysis is described in Section 1.15 in this 2019 AR.	D.17-12-009	OP 41a, p.469	Pacific Gas and Electric Company, Southern California Edison Company, Southern California Gas Company and San Diego Gas & Electric Company (IOUs) shall use the Single Point of Contact model for all multi-family buildings as described in this decision including rent restricted buildings that qualify for common area measures. The IOUs shall conduct and report an annual analysis of the square footage, energy consumption, ESA program participation, and time since the last retrofit of non-deed restricted multi-family properties with a high percentage of low income tenants. This process should adopt, as appropriate, the approach outlined in SDG&E's Advice Letter 2865 E-C, Submission of High Opportunity Projects and Programs (HOPPs) Proposal - Multi-family HOPP Program (SDG&E 3318). This report shall be submitted annually as part of the IOU annual CARE and ESA report. The multi-family Working Group shall consider options for addressing other portions of the multi-family sector beyond those authorized today, and this working group shall develop a formal evaluation plan and data collection requirements for non-deed restricted multi-family buildings.	6/28/2019
27	PG&E reported on the removal of microwaves from the ESA portfolio in section 1.4.3 in this 2019 ESA/CARE Annual Report.	NSDL	p.6-7	PG&E requests the removal of microwaves from the ESA portfolio. We approve this request.	7/1/2019
28	PG&E used the 1% growth factor in to update the estimated eligible population in its Conforming and Mid-Cycle Advice Letters filed in 2017 and 2018, which are used to inform ESA Table 4B penetration. PG&E filed its ESA-CARE Application on November 04, 2019, in accordance with D.19-06-022 directives.	D.17-12-009	OP 77	Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and Southern California Gas Company shall continue to use the current 1% eligible population growth factor for the current Energy Savings Assistance Program cycle, but must propose an updated growth factor in the next application cycle for Commission consideration.	7/19/2019
29	PG&E re-estimated the remaining eligible population for its Mid-Cycle Advice Letters filed in 2018 and authorized in January 2019, using the new update to inform ESA Table 4B penetration in this AR. PG&E filed its ESA-CARE Application on November 04, 2019, in accordance with D.19-06-022 directives.	D.17-12-009	OP 80	Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and Southern California Gas Company shall recalculate and include an estimate for the new remaining Energy Savings Assistance Program eligible population in their annual reports, and shall use those numbers in their next program cycle applications.	7/19/2019
30	See AR ESA Tables 1A and 12 and CARE Table 1. Documented in PG&E Regulatory Accounting Document #17-01-08rev2	NSDL	p.12	PG&E estimates $1M to fund its share of Statewide End-Use Load Profile Vendor out of the CARE and ESA Programs. To align IOU budgets with the vendor cost split in D.16-11-022 and accommodate this work, estimated at $2.2M, PG&E is authorized a budget not to exceed $961,400. This amount is to be drawn evenly from ESA and CARE budgets, $480,700 per program.	8/1/2019
31	PG&E filed AL 4131-G/5614-E on August 12, 2019, and supplemental AL 4131-G-A/5614-E-B on November 25, 2019. Approved December 4, 2019.	D.19-06-022	OP 3	The four large Investor-Owned Utilities Pacific Gas & Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, and Southern California Gas Company shall submit a tier 1 Advice Letter 45 days after the issuance of this decision with calculations of their Energy Savings Assistance bridge funding amount, source for bridge funds, and retreatment goal for the January 1 2021-June 30, 2021 bridge period.	8/12/2019
32	Joint public workshop was help on August 22, 2019.	D.19-06-022	OP 8	On or before August 30, 2019, Pacific Gas & Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, and Southern California Gas Company shall hold a joint public workshop, after giving 20 days advance notice to the service list of this proceeding, to obtain interested parties' input on their preliminary proposals for their post-2020 ESA applications.	8/22/2019

No.	ESA-CARE Activity	CPUC Directive	Directive Reference	Action Required	Completed Date
33	IOUs received an extension to complete this study. The NEB Study was completed in August 2019, as described in AR Section 1.11.	D.17-12-009	COL 89	In order for the next program cycle to be informed by the outcomes of this effort, the IOUs should complete the NEBs study in 2018 and distribute it to the service list when complete.	8/30/2019
34	PG&E presentedpost-2020 ESA program applications at LIOB on September 16, 2019.	D.19-06-022	OP 9	On or before September 15, 2019, Pacific Gas & Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, and Southern California Gas Company shall give a presentation on their post-2020 ESA program applications at a Low Income Oversight Board (LIOB) meeting to obtain and consider LIOB's feedback before submission of the applications.	9/16/2019
35	PG&E re-evaluated and included the proposed measure in its Low Income Program PY21-26 Application, filed on November 4, 2019 in compliance with D.19-06-022 directives.	NSDL	p.6	PG&E shall reevaluate this measure [Room AC Replacements] as savings information is updated through Phase 2 of the 2015-2016 ESA Impact Evaluation.	10/4/2019
36	PG&E re-evaluated cost effectiveness and included its proposed measures in its Low Income Program PY21-26 Application (filed on November 4, 2019) in compliance with the directives of D.19-06-022.	NSDL	p.7	PG&E shall continue to monitor the effectiveness of its entire measure portfolio to determine which measures should continue to be offered and/or retired moving forward.	10/4/2019
37	PG&E's ME&O strategies are discussed in AR Sections 1.3 and 2.4.	D.19-06-022	FOF 4	The IOUs are responsible for executing strategies to cost--effectively identify, target and reach those who are CARE and ESA Program eligible.	10/11/2019
38	PG&E proposed SPOC Finance Technical Assistance plans in its Low Income Program PY21-26 Application (filed on November 4, 2019) in compliance with the directives of D.19-06-022. (See Chapter I, Section D.8.a.A.iii.B on p.I-146; and Section D.8.a.A.iii.C.b on p.I-150).	D.17-12-009	OP 45	Once they have the results of the On Bill Financing technical assistance effort, Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and Southern California Gas Company shall propose pilot plans in their applications for the next program cycle that would establish technical assistance programs for low income multifamily energy efficiency retrofits, in order to achieve higher penetration in this hard to reach market.	11/4/2019
39	PG&E filed its ESA-CARE Application on November 04, 2019, in accordance with D.19-06-022 directives	D.19-06-022	OP 1	The California Alternate Rates for Energy and the Energy Savings Assistance Program and Budget Applications by the large Investor-Owned Utilities Pacific Gas & Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, and Southern California Gas Company shall be filed with the California Public Utilities Commission no later than November 4, 2019. Applications must include the content identified in this Decision and the Guidance Document at Attachment A to this Decision, and must follow the format provided in the Guidance Document.	11/4/2019
40	PG&E filed its ESA-CARE Application on November 04, 2019, in accordance with D.19-06-022 directives, including strategies for targeting eligible customers.	D.19-06-022	text - p.10	We direct the IOUs to identify and prioritize the eligible households that they will target in their post-2020 ESA programs, as described further in Attachment A.	11/4/2019
41	PG&E filed its ESA-CARE Application on November 04, 2019, in accordance with D.19-06-022 directives	D.19-06-022	text - p.10	The guidelines included in Attachment A to this Decision must be followed as closely as possible to allow for efficient application review and analysis.	11/4/2019
42	PG&E filed its ESA-CARE Application on November 04, 2019, in accordance with D.19-06-022 directives	D.19-06-022	text - p.10	The IOUs must include the attached Excel templates with their applications.	11/4/2019
43	PG&E has included the proposed measures in the Low Income Program PY21-26 Application.	D.19-06-022	text - p.18	The IOUs' applications should address potential use of the measures proposed in Cal Advocates' PFM, including but not limited to an independent evaluator, PRG, and/or Commission review of contracts exceeding a certain amount.	11/4/2019
44	PG&E looked at CSD and other models in the Low Income Program PY21-26 Application (filed on November 4, 2019) in compliance with the directives of D.19-06-022. (See Chapter I, Section D.9.)	D.19-06-022	text - p.6	We also direct the IOUs to look to low-income program models from other California agencies and other states. The Department of Community Services and Development (CSD) Low-Income Weatherization Program (LIWP) provides low-income households with solar systems and energy efficiency upgrades at no cost. The CSD LIWP successfully implemented delivery mechanisms that will be relevant for the Multifamily Whole Building program proposals.	11/4/2019
45	PG&E discussed the MA LEAN program in the Low Income Program PY21-26 Application (filed on November 4, 2019) in compliance with the directives of D.19-06-022. (See Chapter I, Section D.9.b on p.I-168).	D.19-06-022	text - p.7	The Massachusetts Low Income Affordability Network (LEAN) Multi-Family Energy Retrofit program is another model that the IOUs should consider.	11/4/2019

No.	ESA-CARE Activity	CPUC Directive	Directive Reference	Action Required	Completed Date
46	PG&E filed its ESA-CARE Application on November 04, 2019, in accordance with D.19-06-022 directives, including relevant findings of the 2016 LINA and LIOB White Paper recommendations.	D.19-06-022	text - p.7	The IOUs should also consider the relevant findings of the 2016 Low Income Needs Assessment (LINA) and the recommendations in the Low Income Oversight Board (LIOB) ESA Post-2020 White Paper and Letter dated December 20, 2018.	11/4/2019
47	PG&E filed its ESA-CARE Application on November 04, 2019, in accordance with D.19-06-022 directives, including relevant information from the Potential and Goals Study in setting its ESA energy savings goal.	D.19-06-022	text - p.7	The IOUs should reference any relevant information from the Potential and Goals Study in setting their ESA energy savings goal.	11/4/2019
48	PG&E discussed leveraging R.19-01-011 offerings in its Low Income Program PY21-26 Application (filed on November 4, 2019) in compliance with the directives of D.19-06-022. (See Chapter I, Section D.5.c.)	D.19-06-022	text - p.8	The Commission anticipates that future programs, from this proceeding [R.19-01-011], will focus in part on serving low-income households. SB1477 requires that 30 percent of the funding for its new construction electrification program will be for low-income housing. In their applications, the IOUs should consider how to partner or leverage new offerings.	11/4/2019
49	PG&E proposed Multi-Family Whole Building program uses a third party to design and implement the program in the Low Income Program PY21-26 Application (filed on November 4, 2019) in compliance with the directives of D.19-06-022. (See Chapter I, Section D.9.E.1-2).	D.19-06-022	text - p.8 - 9	The Commission is specifically interested in a focus on deeper energy savings from measures that are intended to reduce energy use ("resource measures") and innovative program designs for the multifamily sector, which shall include a low-income Multifamily Whole Building energy efficiency program that is a third party program (i.e., proposed, designed, implemented, and delivered by non-utility personnel).	11/4/2019
50	PG&E filed its ESA-CARE Application on November 04, 2019, in accordance with D.19-06-022 directives	D.19-06-022	text - p.8 - 9	As the Commission expects the IOUs to meet the existing statutory target of providing the opportunity to participate in low-income energy efficiency programs to all eligible and willing customers by 2020, we do not anticipate that the ESA Program will look the same beyond 2020. With that in mind, the IOUs should propose alternative program designs in compliance with statutory budget requirements [Pu Util Code Section 382(a)].	11/4/2019
51	PG&E considered opportunities for working with building owners in the Low Income Program PY21-26 Application (filed on November 4, 2019) in compliance with the directives of D.19-06-022. (See Chapter I, Section D.9.)	D.19-06-022	text - p.9	The IOUs proposals for Multifamily Whole Building Program (MFWB) in their applications shall also consider opportunities to work with building owners/managers to coordinate ESA treatment with other building improvements implemented at the time of refinancing.	11/4/2019
52	PG&E considered opportunities for job creation and training in the Low Income Program PY21-26 Application (filed on November 4, 2019) in compliance with the directives of D.19-06-022. (See Chapter I, Section D.9.)	D.19-06-022	text - p.9	The proposals [MFWB] shall also consider all feasible and appropriate opportunities for job training, job creation, or pathways to employment for members of low income or disadvantaged communities who participate in local job training programs.	11/4/2019
53	The P&P Manual was revised and submitted in July 2019.	NSDL	p.12	We approve PG&E's edits to the Statewide ESA Policy and Procedure Manual except where we've denied specific program measure updates herein.	11/4/2019
54	PG&E filed its ESA-CARE Application on November 04, 2019, in accordance with D.19-06-022 directives, including its FERA-specific M&O proposal.	NSDL	p.14	PG&E will include a longer term FERA specific M&O proposal and budget in its upcoming low-income program application, to be filed June 1st, 2019. *Date superseded to 11/4/19 by D.19-06-022.	11/4/2019
55	PG&E conducted outreach to owners of multi-family properties via workshops on Jan 1, Jan 18, Apr 15-16, Aug 20 and Sep 20, 2019. The ESA CAM program coordinates with the Community Services and Development Low-Income Weatherization Program (CSD LIWP) to leverage both program budgets and available measures.	D.17-12-009	OP 39	Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company and Southern California Gas Company shall conduct outreach to the owners of multi-family properties made public on the State Treasurer's website to encourage participation in the Energy Savings Assistance Program. The four utilities shall pursue Memorandum of Understandings and consultation with federal, tribal, local, non-profit, and others that own or manage multi-family housing for low-income Californians to leverage programs and encourage Energy Savings Assistance participation.	11/12/2019
56	PG&E added both the Heat Pump Water Heater Replacement measure and Central Heat Pump Replacement measure into the ESA Program within PG&E's service territories.	NSDL	pp.2-3	PG&E proposes to adopt the Heat Pump Water Heater Replacement measure into the ESA Program as adopted by San Diego Gas & Electric (SDG&E) and Central Heat Pump Replacement measure to as adopted by Southern California Edison (SCE). We approve addition of these measures in PG&E's service territories consistent with similar measures offerings SDG&E's and SCE's services areas.	11/12/2019
57	PG&E has added the HE Furnace Replacement measure into the ESA Program within the PG&E's service area.	NSDL	p.3	PG&E now proposes to adopt the HE Furnace replacement measure as adopted by SoCalGas. Despite the overall low cost effectiveness results, we approve HE Furnaces due to increased cost effectiveness and to mitigate potential health, comfort and safety issues in PG&E's service area.	11/12/2019

No.	ESA-CARE Activity	CPUC Directive	Directive Reference	Action Required	Completed Date
58	PG&E has phased released the Smart Thermostat for all climate zones through program year 2020.	NSDL	p.4	While we support PG&E's phased release for Smart Thermostat, we approve this measure for all climate zones through program year 2020.	11/12/2019
59	PG&E included the Blower Motor Retrofit measure (also known as the Brushless Permanent Magnet or BPM) in its ESA Program through 2020, for customers in the climate zones 11, 12, 13, and 14 in accordance with its Coordinated HVAC Strategy.	NSDL	pp.4-5	PG&E proposes to adopt the Blower Motor Retrofit measure (also known as the Brushless Permanent Magnet or BPM) in its ESA Program. To qualify for the measure, a household must have a central AC, central heat pump, central furnace, or package unit (a combined central AC and furnace). PG&E proposes targeting the measure to climate zones 11, 12, 13, and 14 in accordance with its Coordinated HVAC Strategy. To complement existing HVAC offerings and to mitigate potential health, comfort and safety issues, we approve this request through 2020.	11/12/2019
60	PG&E continues to offer Evaporative Coolers and Central AC Tune Ups in existing eligible climate zones.	NSDL	p.6	Regarding Evaporative Coolers and Central AC Tune Ups, PG&E shall also retain existing eligible climate zones and not restrict or eliminate any climate zones for these measures.	12/4/2019
61	Minor Home Repair cap increase has been applied for all eligible treated households including both ESA 2020 and Go-Backs; The measure is in production in EI in October 2019.	NSDL	p.7	PG&E requests that the Minor Home Repair cap be increased from $750 to $1,000 per ESA 2020 household. We approve this request and apply it statewide for all eligible treated households including both ESA 2020 and Go-Backs.	12/4/2019
62	PG&E's HVAC Fan Delay / Efficient Fan Controller (HLI31) measure is available to gas and electric customers both in existing eligible climate zones.	NSDL	p.6	PG&E requests to expand the measure [Efficient Fan Controllers] to include gas customers in all climate zones to address heating needs and restrict this measure to electric customers residing in climate zones 11, 12, 13, and 14 to address cooling needs and improve electric savings to the customer. For this measure, PG&E shall retain existing eligible climate zones and not eliminate any climate zones.	12/9/2019
63	PG&E reported on Cooling Centers in this 2019 ESA/CARE Annual Report (see Section 2.2.1 and 2.3.2.2) and in its Annual Cooling Center Report on December 20, 2019.	D.17-12-009	text-p340-341	We direct the utilities to continue current coordination efforts with local and tribal entities with respect to cooling center operations, and approve cooling center budgets for SCE, SDG&E, and PG&E that are more closely aligned with actual expenditures for prior program years, instead of relying solely on previously authorized amount.	12/20/2019
64	PG&E reported on Cooling Centers in this 2019 ESA/CARE Annual Report (see Section 2.2.1 and 2.3.2.2) and in its Annual Cooling Center Report on December 20, 2019.	D.17-12-009	OP 121	Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company shall continue to produce the cooling center compliance annual report, but may in the future revisit the existing metrics and modify where appropriate. The reports must inform the Commission of how ratepayer funds are being utilized to support and promote cooling centers and simultaneously encourage low income program enrollments and participation throughout the state. The reports must also include a description of any changes to cooling center operations that were enabled by ratepayer funding, such as extended hours or the opening of additional locations. If no such changes occurred, that must still be reported.	12/23/2019
65	PG&E reported on CHANGES in all ESA/CARE Monthly Reports in 2019 (see CARE Tables 9-11) and in this 2019 AR (see Section 2.7.1).	D.15-12-047	OP 28	Pacific Gas and Electric Company, Southern California Edison, Southern California Gas Company, and San Diego Gas & Electric Company shall include the Community Help and Awareness of Natural Gas and Electricity Services bill issue assistance and education workshop materials and attendance statistics in their monthly CARE reports until long-term funding is established from the Commission's budget.	Reoccurring monthly on the 23rd
66	Tracking was set up in PG&E's database in 2017 to ensure that no household receiving energy education alone would be counted as treated. This data is reported in ESA Table 18. 6,333 homes received energy education-only in 2019.	D.17-12-009	OP11	FOR THE MONTHLY REPORT: The four large Investor Owned Utilities' (Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Edison Company, Southern California Edison Company) (IOUs') shall not count a household as "treated" if provided energy education alone. The four large IOUs must track and report all households that only receive Energy Education in their monthly and annual compliance reports. Households receiving only education will not be permitted to self certify and these households will be required to demonstrate their eligibility to receive energy education.	Reoccurring monthly on the 23rd

No.	ESA-CARE Activity	CPUC Directive	Directive Reference	Action Required	Completed Date
67	LIOB Reporting Requirements: There were 4 LIOB Meetings in 2019 (3/6 in El Cerrito, 6/24 in Compton, 9/16 in San Ysidro, and 12/10 in Hanford). PG&E attended all and its regular IOU updates were included at all of these. Agenda and IOU presentations are all available at LIOB website: http://www.liob.org/ Specifically: p.40: Included in LIOB IOU regular update presentation, and also included in ESA Tables 1 and 1A and CARE Table 1. p.54: Included in LIOB IOU regular update presentation, and also included in AR (2019: Section 1.8 and 2.4.6.) p.196: included in LIOB IOU regular update presentation, and also included in ESA Tables 2B, 3, 4A and 5 (water/energy nexus savings not included monthly). And in AR. p.327: Included in LIOB IOU regular update presentation. and also included in ESA Table 7, and costs in AR. p.365-366: Included in LIOB IOU regular update presentation, and also included in ESA Tables 1, 1A, 2, 2A, and 2B and CARE Tables 1 and 2.	D.17-12-009	Text -various	LIOB reporting requirements: P.40: IOUs shall continue to report on its balances of unspent and underspent funds to both the Commission in its ongoing reports and in its reports to the LIOB. IOUs shall report on factors driving unspent fund balances, steps taken to appropriately deploy funds, and make suggestions to the mid-cycle Wkg Grp about adjustments that would help deploy funds authorized by this Decision. P.54: Order tracking of customers who elect to "opt-in" to a new DR, TOU, or Critical Peak Pricing (CPP) program, and report that information in the IOUs' ESAP annual reports, and in quarterly reports to the LIOB providing ESA updates. P. 196: IOUs shall report quarterly to the LIOB, and annually in their report to the Commission on Multi-Family common area measure participation, program spending, and provide an analysis of treatment results including, but not limited to, energy and water/energy nexus savings. P.327: ... because several proceedings will benefit from the development of these My Energy/My Account upgrades, carefully track their costs, so that these costs can be considered in this and other proceedings' decision making related to cost effectiveness. Otherwise, the CARE and ESA programs will appear more costly than they truly are (given that all costs are allocated to them, but only some of the benefits), and programs in other proceedings will appear less costly than they truly are (because they receive the benefits of these efforts, without being allocated their costs). We therefore direct the IOUs to track the costs of the above efforts as a separate line item in their annual reports, if any, to identify all of the programs or initiatives that will be able to benefit from them, and to coordinate with the relevant proceedings so that the relevant costs can be considered in those proceedings' cost effectiveness decision making. These findings should be reported in the CARE ESA Annual Report, and to the LIOB. P.365-366: With budgets adopted in this Decision, we expect the IOUs to keep pace with the expenditures and to report at least quarterly to the LIOB (in addition to the existing monthly reports to the Commission's ED) and in their annual reports about progress toward achievement of program goals and levels of spending.	Reoccurring Quarterly

Abbreviations:
AL: Advice Letter
AR: Annual Report
D: Decision
FOF: Finding of Fact
ME&O: Marketing, Education and Outreach
NSDL: Non-Standard Disposition Letter re PGE AL 3990-G/5329-E, 3990-G-A/5329-E-A, and 3990-G-B/5329-E-B
OP: Ordering Paragraph

7. Appendix B: ESA and CARE Program Tables

Summary Table – ESA Program and CARE Program

ESA Program – Table 1 – Overall Program Expenses

ESA Program – Table 2 – Expenses & Energy Savings by Measures Installed

ESA Program – Table 2A - Expenses & Energy Savings by Measures Installed: CSD Leveraging

ESA Program – Table 2B - Expenses & Energy Savings by Measures Installed: MF Common Area

ESA Program – Table 3 – Cost-Effectiveness

ESA Program – Table 4 – Detail By Housing Type and Source

ESA Program – Table 5 – Direct Purchases & Installation Contractors

ESA Program – Table 6 – Installation Cost of Program Installation Contractors

ESA Program – Table 7 – Expenditures by Cost Elements

ESA Program – Table 8 – Homes Unwilling/Unable to Participate

ESA Program – Table 9 – Life Cycle Bill Savings by Measure

ESA Program – Table 10 – Energy Rate Used for Bill Savings Calculations

ESA Program – Table 11 – Bill Savings Calculations by Program Year

ESA Program – Table 12 – Fund Shifting

ESA Program – Table 13 – Categorical Enrollment

ESA Program – Table 14 – Leveraging and Integration

ESA Program – Table 15 – Lighting

ESA Program – Table 16 – “Add-Back” Measures

ESA Program – Table 17 – Expenditures for Pilots and Studies

ESA Program – Table 18 – Miscellaneous (2nd Refrigerators, Education Only, A/C Cycling, etc.)

CARE Program – Table 1 – CARE Overall Program Expenses

CARE Program – Table 2 – CARE Enrollment, Recertification, Attrition, and Penetration

CARE Program – Table 3A – CARE Post-Enrollment Verification Results (Model)

CARE Program – Table 3B – CARE Post-Enrollment Verification Results (High Usage)

CARE Program – Table 4 – Self Certification and Recertification

CARE Program – Table 5 – Enrollment by County

CARE Program – Table 6 – Recertification Results

CARE Program – Table 7 – Capitation Contractors

CARE Program – Table 8 – Participants per Month

CARE Program – Table 9 – Average Monthly Usage & Bill

CARE Program – Table 10 – CARE Surcharge & Revenue

CARE Program – Table 11 – CARE Capitation Applications

Energy Savings Assistance Program and
California Alternate Rates for Energy Program
Pacific Gas and Electric Company
2019 Summary Highlights

ESA Program

2019 Energy Savings Assistance Program Summary			
2019	**Authorized / Planning Assumptions**	**Actual**	**%**
Budget	$209,387,402	$160,824,974	77%
Funded from 2009-2018 Unspent Funds	$59,693,950	$10,126,094	17%
Summary Homes Treated	102,237	106,673	104%
Summary kWh Saved		68,951,001	
Summary kW Demand Reduced		8,595	
Summary Therms Saved		(470,906)	
First Touches Homes Treated		42,490	
- kWh Saved		26,973,891	
- kW Demand Reduced		3,384	
- Therms Saved		(160,081)	
Go-Backs/Retreated Homes		64,183	
- kWh Saved		41,977,111	
- kW Demand Reduced		5,211	
- Therms Saved		(310,824)	

Note: The authorized budgets (including from unspent funding) and values shown for planning assumptions are from PG&E authorized funding per year in D.16-11-022 and approved midcycle request as per approval from AL 3990-G/5329-E A/B on January 4, 2019.

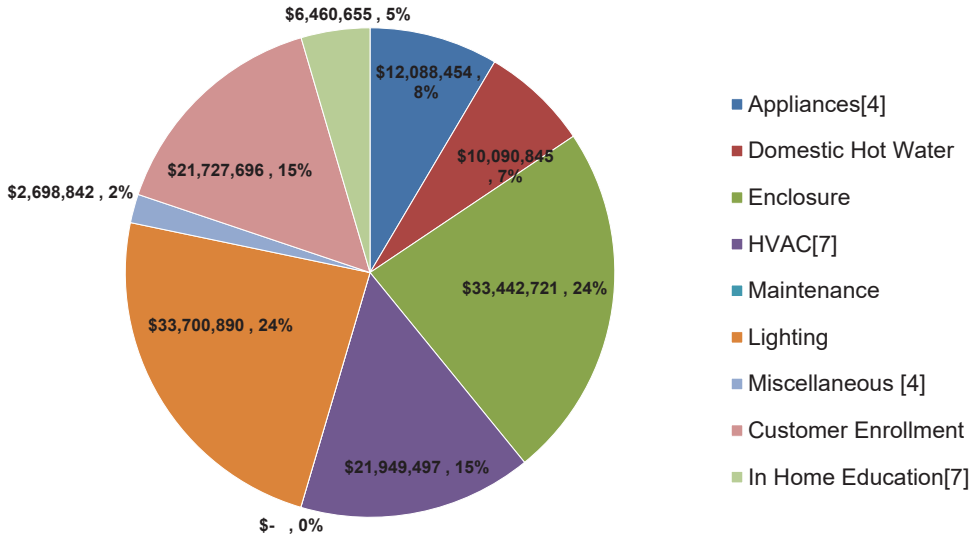
There were no authorized planning assumptions for First Touch or ReTreated homes in D.16-11-022.

CARE Program

2019 CARE Program Summary			
2019	**Authorized Budget**	**Actual**	**%**
Administrative Expenses	$ 18,683,781	$ 11,196,256	60%
Subsidies	$ 593,186,130	$ 638,701,809	108%
Service Establishment Charge			
Total Program Costs and Discounts [1]	**$ 611,869,911**	**$ 649,898,065**	**106%**
2019 CARE New Enrollments	**Automatically Enrolled via Data Sharing, ESA Participation, etc**	**Self Certified as Categorically Eligible**	**Self Certified as Income Eligible**
Method	30,835	88,542	114,896
2019 CARE Penetration	**Estimated Eligible Participants**	**Participants**	**Penetration Rate**
Total Enrolled	1,446,414	1,382,663	95.6%

[1] Total program administrative expenses did not exceed the overall authorized budget. The CARE discount exceeded the authorized amount by $45,515,679. Per D.02-09-021, PG&E is authorized to recover the full value of the discount through the CARE two-way balancing account on an automatic pass-through basis.

2019
ESA Program Energy Efficiency Expenditures by Measure Group



ESA Table 1 - ESA Overall Program Expenses
Pacific Gas and Electric Company
Program Year 2019

ESA Program:	2019 Authorized Budget [6]			2019 Annual Expenses			% of Budget Spent		
	Electric	Gas	Total	Electric	Gas	Total	Electric	Gas	Total
Energy Efficiency									
Appliances[4]	$ 11,626,596	$ 461,859	$ 12,088,454	$ 11,626,596	$ 461,859	$ 12,088,454	100%	100%	100%
Domestic Hot Water	$ 441,166	$ 9,698,054	$ 10,139,220	$ 392,791	$ 9,698,054	$ 10,090,845	89%	100%	100%
Enclosure	$ 7,595,924	$ 27,423,032	$ 35,018,955	$ 6,019,690	$ 27,423,032	$ 33,442,721	79%	100%	95%
HVAC[7]	$ 44,481,768	$ 12,469,789	$ 56,951,557	$ 9,479,707	$ 12,469,789	$ 21,949,497	21%	100%	39%
Maintenance	$ -	$ -	$ -	$ -	$ -	$ -			
Lighting	$ 35,358,490	$ -	$ 35,358,490	$ 33,700,890	$ -	$ 33,700,890	95%		95%
Miscellaneous [4]	$ 2,698,842	$ -	$ 2,698,842	$ 2,698,842	$ -	$ 2,698,842	100%		100%
Customer Enrollment	$ 17,107,236	$ 8,068,284	$ 25,175,520	$ 15,100,748	$ 6,626,947	$ 21,727,696	88%	82%	86%
In Home Education[7]	$ 4,490,155	$ 1,970,500	$ 6,460,655	$ 4,490,155	$ 1,970,500	$ 6,460,655	100%	100%	100%
Pilot [5]	$ 134,609	$ 21,252	$ 155,861	$ 30,564	$ 18,106	$ 48,670	23%	85%	31%
Implementation [2],[8]	$ 5,384,301	$ 2,568,250	$ 7,952,551	$ 4,632,582	$ 2,033,004	$ 6,665,585	86%	79%	84%
Energy Efficiency TOTAL	**$ 129,319,087**	**$ 62,681,019**	**$ 192,000,106**	**$ 88,172,565**	**$ 60,701,290**	**$ 148,873,855**	**68%**	**97%**	**78%**
Training Center	$ 919,229	$ 446,380	$ 1,365,609	$ 639,845	$ 280,795	$ 920,640	70%	63%	67%
Inspections	$ 3,169,996	$ 1,452,238	$ 4,622,234	$ 2,305,386	$ 1,011,716	$ 3,317,102	73%	70%	72%
Marketing and Outreach	$ 1,871,509	$ 889,221	$ 2,760,730	$ 1,122,317	$ 492,528	$ 1,614,844	60%	55%	58%
Statewide Marketing Education and Outreach	$ -	$ -	$ -	$ -	$ -	$ -			
Measurement and Evaluation Studies	$ 159,501	$ 77,234	$ 236,735	$ 56,509	$ 24,799	$ 81,308	35%	32%	34%
Regulatory Compliance	$ 630,808	$ 303,866	$ 934,675	$ 537,649	$ 235,947	$ 773,596	85%	78%	83%
General Administration	$ 4,991,142	$ 2,390,808	$ 7,381,950	$ 3,584,994	$ 1,573,271	$ 5,158,264	72%	66%	70%
CPUC Energy Division	$ 59,327	$ 26,036	$ 85,363	$ 59,327	$ 26,036	$ 85,363	100%	100%	100%
TOTAL PROGRAM COSTS [1],[3]	**$ 141,120,600**	**$ 68,266,802**	**$ 209,387,402**	**$ 96,478,592**	**$ 64,346,381**	**$ 160,824,974**	**68%**	**94%**	**77%**
Funded Outside of ESA Program Budget									
Indirect Costs				$ -	$ -	$ -			
NGAT Costs				$ -	$ 6,865,780	$ 6,865,780			

[1] Reflects the authorized funding per year in D.16-11-022 and updated via Resolution G-3531 addressing PG&E Conforming Advice Letter 3830-G/5043-E and PG&E Supplemental Conforming Advice Letter 3830-G-A/5043-E-A.
[2] Reflects a new budget category and includes the primary administrative fee for Implementer(s).
[3] Program budgets have been updated by $1,793,922 to include employee benefits costs approved in the GRC (D.17-05-013) - Decision Authorizing Pacific Gas and Electric Company's General Rate Case Revenue Requirement for 2017-2019, issue date of May 11, 2017.
[4] PG&E previously reported Smart Powerstrips under Appliances. This has been moved to Miscellaneous.
[5] Includes Pilot budget pulled forward from 2018 $47,459.55.
[6] Includes carryforward from 2018 to 2019 for a total of $20,788,172 (Electric $11,481,904 and Gas $9,306,268) and carryback from 2020 into 2019 $3,903,535(Electric $1,241,944 and Gas $2,661,591)
[7] Includes fundshift from current funding cycle to unspent finds Gas $6,518,815 for HVAC and $279,658 Electric and $258,146 Gas for In Home Education
[8] Post close adjustment for implenentation costs accrued in December. Will be reversed in financials in February 2020

Note: Any required corrections/adjustments are reported herein and supersede results reported in prior months and may reflect YTD adjustments.

ESA Table 1A - Expenses Funded From 2009-2016 Unspent ESA Program Funds
Pacific Gas and Electric Company
Program Year 2019

ESA Program	Authorized Budget			Annual Expenses			% of Budget Spent YTD		
	Electric	Gas	Total	Electric	Gas	Total	Electric	Gas	Total
Energy Efficiency									
Appliances	$ 15,021,704	$ -	$ 15,021,704			$ -	0%		0%
Domestic Hot Water	$ 1,107,222	$ 3,500,000	$ 4,607,221			$ -	0%	0%	0%
HVAC [6]	$ 18,648,079	$ 3,018,815	$ 21,666,894	$ -	$ 6,518,815	$ 6,518,815	0%	216%	30%
In Home Education [6]	$ 366,518	$ 171,286	$ 537,804	$ 279,658	$ 258,146	$ 537,804	76%	151%	100%
Implementation [3]	$ 320,011	$ 159,953	$ 479,964	$ 82,064	$ 75,751	$ 157,815	26%	47%	33%
Multi-Family Common Area Measures	$ 8,720,889	$ 4,045,184	$ 12,766,073	$ 1,227,646	$ 1,133,211	$ 2,360,857	14%	28%	18%
Leveraging - CSD [4]	$ 1,947,317	$ 975,485	$ 2,922,802	$ 150,212	$ 138,657	$ 288,868	8%	14%	10%
Pilot	$ -	$ -	$ -	$ -	$ -	$ -			
Studies	$ 62,550	$ 27,450	$ 90,000	$ -	$ -	$ -	0%	0%	0%
Regulatory Compliance	$ 1,074,832	$ 110,951	$ 1,185,783	$ 5,200	$ 4,800	$ 10,000	0%	4%	1%
General Administration	$ 277,784	$ 137,921	$ 415,705	$ 131,006	$ 120,928	$ 251,934	47%	88%	61%
TOTAL UNSPENT PROGRAM COSTS [1]	$ 47,546,905	$ 12,147,045	$ 59,693,950	$ 1,875,785	$ 8,250,309	$ 10,126,094	4%	68%	17%

NOTE: Any required corrections/adjustments are reported herein and supersede results reported in prior months and may reflect YTD adjustments.

1: Add additional categories if relevant to your utility

2: Refers to budget spent supporting CSD's LIWP program

[1] D.16-11-022 directed funding for new initiatives to come from unspent 2009-2016 ESA Program funds, and directed IOUs to update their budgets by Conforming Advice Letter. Resolution G-3531 authorized PG&E's 2017-2020 ESA budget, including the addition of unspent funding reported here.
[2] Incremental increases in existing energy efficiency measures from new directives (e.g., removal of 3 measure minimum) use authorized funds until depleted, then will use carryover funds.
New measures and activities not included in PG&E' Application use 2009-2016 unspent funds.
[3] Reflects a new budget category and includes the primary administrative fee for Implementer(s), including multifamily SPOC activities.
[4] Includes unspent funds transferred to Marin Clean Energy (as authorized by OP 147 in Decision 16-11-022) and unspent funds to support Department of Community Services and Development's Low-Income Weatherization Program initiative.
[5] Includes carryforward from 2018 to 2019 for a total of $16,093,721.5 (Electric $35,558,688 and Gas $6,966,423)
[6] Includes fundshift from current funding cycle to unspent finds Gas $3,018,815 for HVAC and $279,658 Electric and $258,146 Gas for In Home Education

Note: Any required corrections/adjustments are reported herein and supersede results reported in prior months and may reflect YTD adjustments.

ESA Table 2 - Measure Installations and Savings
Pacific Gas and Electric Company
Program Year 2019

Measures	ESA Program (Summary)Total								ESA Program (First Touch Homes Treated)								ESA Program (Re-Treated Homes/Go Backs)							
		2019 Completed & Expensed Installation								2019 Completed & Expensed Installation								2019 Completed & Expensed Installation						
	Units	Quantity Installed	kWh [4] (Annual)	kW [4] (Annual)	Therms [4] (Annual)	Expenses ($) [6]	% of Expenditure		Units	Quantity Installed	kWh [4] (Annual)	kW [4] (Annual)	Therms [4] (Annual)	Expenses ($) [6]	% of Expenditure		Units	Quantity Installed	kWh [4] (Annual)	kW [4] (Annual)	Therms [4] (Annual)	Expenses ($) [6]	% Expe
liances		(K+S)	(L+T)	(M+U)	(N+V)	(O+W)																		
n Efficiency Clothes Washer	Home	3,367	20,882	4	62,650	$ 2,945,879	2.1%		Home	1,284	9,794	2	23,845	$ 1,123,406	2.0%		Home	2,083	11,089	2	38,805	$ 1,822,473	2
igerators	Each	9,786	5,402,305	756	-	$ 7,960,928	5.6%		Each	4,105	2,243,284	314	-	$ 3,339,425	6.0%		Each	5,681	3,159,021	442	-	$ 4,621,504	5
owaves	Home	8,022	(131,592)	(26)	12,759	$ 742,944	0.5%		Home	3,801	(73,873)	(15)	5,328	$ 352,023	0.6%		Home	4,221	(57,719)	(12)	7,431	$ 390,921	0
ezers	Each								Each	-	-	-	-	$ -			Each						
nestic Hot Water						-																	
er Hot Water	Home	79,760	550,174	77	404,434	$ 6,167,148	4.3%		Home	31,223	256,169	36	159,950	$ 2,414,203	4.3%		Home	48,537	294,006	41	244,484	$ 3,752,944	4
k and Pipe Insulation	Home	9,187	39,771	7	37,504	$ 35,092	0.0%		Home	4,213	20,412	3	17,083	$ 16,092	0.0%		Home	4,974	19,359	3	20,421	$ 18,999	0
er Heater Repair/Replacement	Home	1,560	-	-	11,430	$ 3,333,967	2.3%		Home	533	-	-	3,724	$ 1,139,105	2.0%		Home	1,027	-	-	7,707	$ 2,194,862	2
rmostat-controlled Shower Valves (SCE)	Each								Each	-	-	-	-	$ -			Each						
r - Combined Showerhead/TSV	Each								Each								Each						
r - Heat Pump Water Heater	Each								Each								Each						
r - Tub Diverter/ Tub Spout	Each	353	30	-	581	$ 26,198	0.0%		Each	91	7	-	148	$ 6,754	0.0%		Each	262	23	-	434	$ 19,445	0
losure																							
Sealing / Envelope [1]	Home	62,459	183,866	35	64,466	$ 27,083,684	19.0%		Home	25,174	87,123	17	25,137	$ 10,916,036	19.5%		Home	37,285	96,743	18	39,328	$ 16,167,649	18
Insulation	Home	2,862	27,533	5	129,905	$ 4,775,949	3.3%		Home	1,511	16,328	3	68,259	$ 2,521,474	4.5%		Home	1,351	11,205	2	61,645	$ 2,254,475	2
AC																							
nace Repair/Replacement	Home	1,800	-	-	(43,991)	$ 6,011,957	4.2%		Home	620	-	-	(15,158)	$ 2,070,785	3.7%		Home	1,180	-	-	(28,833)	$ 3,941,172	4
m A/C Replacement	Home	1,451	(277,161)	(50)	-	$ 1,262,468	0.9%		Home	360	(68,723)	(12)	-	$ 313,224	0.6%		Home	1,091	(208,438)	(38)	-	$ 949,244	1
tral A/C Replacement	Home	-	-	-	-		0.0%		Home	-	-	-	-		0.0%		Home	-	-	-	-		0
t Pump Replacement	Home	-							Home	-	-	-	-	$ -			Home	-	-	-	-		
porative Coolers	Home	2,059	774,305	124	-	$ 1,475,444	1.0%		Home	677	255,027	41	-	$ 485,127	0.9%		Home	1,382	519,278	83	-	$ 990,317	1
t Testing and Sealing	Home	18,111	(36,352)	(5)	114,911	$ 12,560,514	8.8%		Home	7,011	(16,504)	(2)	44,547	$ 4,862,336	8.7%		Home	11,100	(19,847)	(3)	70,364	$ 7,698,178	8
r - Energy Efficient Fan Control	Home	7,626	(704,848)	(127)	-	$ 1,756,619	1.2%		Home	3,090	(285,622)	(51)	-	$ 711,769	1.3%		Home	4,536	(419,227)	(76)	-	$ 1,044,849	1
r - Prescriptive Duct Sealing	Home								Home	-	-	-	-	$ -	0.0%		Home	-	-	-	-	$ -	0
tral A/C Tune up	Home	9,417	(160,568)	(32)	-	$ 3,361,404	2.4%		Home	3,857	(80,849)	(16)	-	$ 1,376,758	2.5%		Home	5,560	(79,718)	(16)	-	$ 1,984,645	2
r - Smart Thermostats	Each	505	107,881	19	12,642	$ 144,545	0.1%		Each	225	48,404	9	5,621	$ 64,401	0.1%		Each	280	59,476	11	7,021	$ 80,144	0
r - High Efficiency Forced Air Unit (HE FAU)	Home	-	-	-	-	$ -	0.0%		Home	-	-	-	-	$ -			Home						
r - A/C Time Delay	Home								Home								Home						
ntenance																							
nace Clean and Tune	Home								Home								Home						
									Home								Home						
nting																							
ting (Occupancy Sensor)	Home	238	6,854	12	-	$ 24,160	0.0%		Home	86	2,548	5	-	$ 8,730	0.0%		Home	152	4,306	8	-	$ 15,430	0
r - LED Reflector Downlight Retrofit Kits	Each								Each	-	-	-	-	$ -			Each						
Diffuse A-Lamps	Each	840,119	25,432,902	3,097	(581,968)	$ 6,850,936	4.8%		Each	357,748	10,877,673	1,326	(247,042)	$ 2,917,335	5.2%		Each	482,371	14,555,230	1,771	(334,925)	$ 3,933,601	4
Reflector Bulbs (BR)	Each	81,662	3,792,720	463	(89,529)	$ 703,969	0.5%		Each	40,936	1,901,722	232	(44,863)	$ 352,890	0.6%		Each	40,726	1,890,998	231	(44,666)	$ 351,080	0
Torchieres	Each	34,052	2,404,026	291	(54,802)	$ 1,898,712	1.3%		Each	11,972	846,921	103	(19,170)	$ 667,549	1.2%		Each	22,080	1,557,105	188	(35,632)	$ 1,231,163	1
Exterior Hardwired Fixtures	Each	81,933	6,358,410	612	-	$ 4,637,235	3.2%		Each	28,557	2,216,166	213	-	$ 1,616,266	2.9%		Each	53,376	4,142,244	399	-	$ 3,020,969	3
Interior Hardwired Fixtures	Each	351,754	24,501,017	2,967	(551,898)	$ 18,133,858	12.7%		Each	120,799	8,441,473	1,024	(187,490)	$ 6,227,511	11.1%		Each	230,955	16,059,545	1,942	(364,408)	$ 11,906,347	13
cellaneous																							
l Pumps	Home								Home	-	-	-	-	$ -			Home						
art Power Strips - Tier 1	Home	19,898	-	-	-	$ 1,681,511	1.2%		Home	8,599	-	-	-	$ 726,672	1.3%		Home	11,299	-	-	-	$ 954,839	1
r - Smart Power Strips - Tier 2	Each	8,669	658,844	367	-	$ 962,686	0.7%		Each	3,637	276,412	154	-	$ 403,886	0.7%		Each	5,032	382,432	213	-	$ 558,800	0
ts																							
tomer Enrollment																							
reach & Assessment	Home	106,673				$ 21,331,086	14.9%		Home	42,490				$ 8,496,600	15.2%		Home	64,183				$ 12,834,486	14
ome Education	Home	106,673				$ 6,872,798	4.8%		Home	42,490				$ 2,737,574	4.9%		Home	64,183				$ 4,135,225	4
al Savings/Expenditures			**68,951,001**	**8,595**	**(470,906)**	**$ 142,741,692**					**26,973,891**	**3,384**	**(160,081)**	**$ 55,867,932**					**41,977,111**	**5,211**	**(310,824)**	**$ 86,873,759**	
l Households Weatherized [2]		83,907								33,996								49,911					

seholds Treated	Total (K+S)		First Touches		Re-treated Homes/Go-Backs	
ngle Family Households Treated	Home	78,597	Home	29,655	Home	48,942
ulti-family Households Treated	Home	19,340	Home	8,348	Home	10,992
obile Homes Treated	Home	8,736	Home	4,487	Home	4,249
al Number of Households Treated	Home	106,673	Home	42,490	Home	64,183
igible Households to be Treated for PY [3]	Home	102,237	Home	46,006	Home	56,231
f Households Treated	%	104%	%	92%	%	114%
aster-Meter Households Treated	Home	6,138	Home	3,545	Home	2,593

Envelope and Air Sealing Measures may include outlet cover plate gaskets, attic access weatherization, weatherstripping - door, caulking and minor home repairs. Minor home repairs predominantly are door jamb repair / replacement, door repair, and window putty.
Weatherization may consist of attic insulation, attic access weatherization, weatherstripping - door, caulking, & minor home repairs
Based on OP 79 of D.16-11-022.
All savings are calculated based on the following sources:
NV/GL Impact Evaluation Program Years 2015-2017 Impact II
LED savings from PGECOLTG175-R1
Expenses include accruals booked to measures.

e: Any required corrections/adjustments are reported herein and supersede results reported in prior months and may reflect YTD adjustments.

ESA Table 2A - CSD Measure Installations and Savings
Pacific Gas and Electric Company
Program Year 2019

Measures	Units	ESA Program - CSD Leveraging Year-To-Date Completed & Expensed Installation Quantity Installed	kWh [3] (Annual)	kW [3] (Annual)	Therms [3] (Annual)	Expenses ($)	% of Expenditure
Appliances							
High Efficiency Clothes Washer	Each	-	-	-	-	$ -	0.0%
Refrigerators	Each	-	-	-	-	$ -	0.0%
Microwaves [4]	Each	-	-	-	-	$ -	0.0%
Domestic Hot Water							
Water Heater Blanket	Home	-	-	-	-	$ -	0.0%
Low Flow Shower Head	Home	-	-	-	-	$ -	0.0%
Water Heater Pipe Insulation	Home	-	-	-	-	$ -	0.0%
Faucet Aerator	Home	-	-	-	-	$ -	0.0%
Water Heater Repair/Replacement	Each	-	-	-	-	$ -	0.0%
Thermostatic Shower Valve	Each	-	-	-	-	$ -	0.0%
Combined Showerhead/TSV	Each	-	-	-	-	$ -	0.0%
Heat Pump Water Heater	Each	-	-	-	-	$ -	0.0%
Tub Diverter/ Tub Spout	Each	-	-	-	-	$ -	0.0%
Thermostat-controlled Shower Valve	Each	-	-	-	-	$ -	0.0%
Enclosure							
Air Sealing / Envelope [1]	Each	-	-	-	-	$ -	0.0%
Caulking	Each	-	-	-	-	$ -	0.0%
Attic Insulation	Each	-	-	-	-	$ -	0.0%
HVAC							
FAU Standing Pilot Conversion	Each	-	-	-	-	$ -	0.0%
Furnace Repair/Replacement	Each	-	-	-	-	$ -	0.0%
Room A/C Replacement	Each	-	-	-	-	$ -	0.0%
Central A/C replacement	Each	-	-	-	-	$ -	0.0%
Heat Pump Replacement	Each	-	-	-	-	$ -	0.0%
Evaporative Cooler (Replacement)	Each	-	-	-	-	$ -	0.0%
Evaporative Cooler (Installation)	Each	-	-	-	-	$ -	0.0%
Duct Testing and Sealing	Home	-	-	-	-	$ -	0.0%
Energy Efficient Fan Control	Home	-	-	-	-	$ -	0.0%
Prescriptive Duct Sealing	Home	-	-	-	-	$ -	0.0%
High Efficiency Forced Air Unit (HE FAU)	Home	-	-	-	-	$ -	0.0%
A/C Time Delay	Home	-	-	-	-	$ -	0.0%
Maintenance							
Furnace Clean and Tune	Home	-	-	-	-	$ -	0.0%
Central A/C Tune up	Home	-	-	-	-	$ -	0.0%
Lighting							
Interior Hard wired LED fixtures	Each	-	-	-	-	$ -	0.0%
Exterior Hard wired LED fixtures	Each	-	-	-	-	$ -	0.0%
Torchiere LED	Each	-	-	-	-	$ -	0.0%
Occupancy Sensor	Each	-	-	-	-	$ -	0.0%
LED Night Lights	Each	-	-	-	-	$ -	0.0%
LED Diffuse Bulb (60W Replacement)	Each	-	-	-	-	$ -	0.0%
LED Reflector Bulb	Each	-	-	-	-	$ -	0.0%
LED Reflector Downlight Retrofit Kits	Each	-	-	-	-	$ -	0.0%
LED A-Lamps	Each	-	-	-	-	$ -	0.0%
Miscellaneous							
Pool Pumps	Each	-	-	-	-	$ -	0.0%
Smart Power Strips - Tier 1	Each	-	-	-	-	$ -	0.0%
Smart Power Strips - Tier 2	Each	-	-	-	-	$ -	0.0%
Pilots							
Customer Enrollment							
Outreach & Assessment	Home	-	-	-	-	$ -	0.0%
In-Home Education	Home	-	-	-	-	$ -	0.0%
Total Savings/Expenditures			-	-	-	$ -	0.0%
Total Households Weatherized [2]							

CSD MF Tenant Units Treated			**Total**
			-
			-

Note: Any required corrections/adjustments are reported herein and supersede results reported in prior months and may reflect YTD adjustments.

[1] Envelope and Air Sealing Measures may include outlet cover plate gaskets, attic access weatherization, weatherstripping - door, caulking and minor home repairs. Minor home repairs

[2] Weatherization may consist of attic insulation, attic access weatherization, weatherstripping - door, caulking, & minor home repairs.

[3] All savings are calculated based on the following sources:
DNV/GL Impact Evaluation Program Years 2015-2017 Impact II

ESA Table 2B - MF CAM Measure Installations and Savings
Pacific Gas and Electric Company
Program Year 2019

		*ESA Program - Multifamily Common Area Measures [1]						
			2019 Completed & Expensed Installation					
	Measures	Units (of Measures such as "each")	Quantity Installed	kWh (Annual)	kW (Annual)	Therms (Annual)	Expenses ($)	% of Total Expenditure [2]
	Appliances							
	Domestic Hot Water							
	Envelope							
	HVAC							
	Lighting							
	Miscellaneous							
	Ancillary Services							
	Audit							
	Total							

Multifamily Buildings Treated	Total
Total Number of Multifamily Properties Treated[2]	
Subtotal of Master-metered Multifamily Properties Treated	
Total Number of Multifamily Tenant Units w/in Properties Treated[3]	

	2019 Expenses			
ESA Program - Multifamily Common Area	Electric	Gas	Total	
Administration				
Direct Implementation (Non-Incentive)				
Direct Implementation				*<<Includes measures costs*
TOTAL MF CAM COSTS	$ -	$ -	$ -	

Note: Any required corrections/adjustments are reported herein and supersede results reported in prior months and may reflect YTD adjustments.

Standard Notes 1 - 6 (do not delete)

1. Measures are customized by each IOU, see 'Table 2B-1, Eligible Measures List'. Measures list may change based on available information on both costs and benefits and may vary across climate zones. Each IOU should fill out Table 2B as it pertains to their program. Table 2B-1 Column A should match Table 2B Column A for eligible (not canceled) measures.

2. Multifamily properties are sites with at least five (5) or more dwelling units. The properties may have multiple buildings.

3. Multifamily tenant units are the number of dwelling units located within properties treated. This number does not represent the same number of dwellings treated as captured in table 2A.

4. Audit costs may be covered by other programs or projects may utilize previous audits. Not all participants will have an audit cost associated with their project.

5. Applicable to Deed-Restricted, government and non-profit owned multi-family buildings described in D.16-11-022, modified by D.17-12-009, where 65% of tenants are

6. Commissioning costs, as allowable per the Decision, are included in measures total cost unless otherwise noted.

ESA Table 3 - Program Cost Effectiveness
Pacific Gas and Electric Company
Program Year 2019

	Ratio of Benefits Over Costs			Net Benefits ($ in Millions)	
	ProgramYear	**ESACET**	**Resource TRC**	**ESACET**	**ResourceTRC**
	2019	0.80	0.56	(32.54)	(43.12)

Notes:

- All program measures, including resource and non-resource, are included in the ESACET. Only measures considered "resource measures" (measures with savings in kWh/Therms) are included in the Resource TRC.
- The ESACET includes energy and non-energy benefits and all program costs including measure, installation, and administrative costs.
- The Resource TRC includes energy benefits and program measure and installation costs, and does not include administration costs.
- D.14-08-030, Ordering Paragraph 43 directs the application of the two new cost effectiveness tests, ESACET and Resource Measure TRC.

ESA Table 4 - Detail by Housing Type and Source [*]
Pacific Gas and Electric Company
Program Year 2019

Customer	Housing Type	Table 4A - 2018 Energy Savings1 # Homes Treated	(GWh)	MW	(MM Therm)	2018 Expenses
Gas and Electric Customers						
Owners - Total		**43,776**	**8.222**	**1.050**	**(0.146)**	**$ 6,899,584**
	Single Family	37,544	7.335	0.930	(0.134)	$ 6,179,329
	Multi Family	338	0.049	0.006	(0.001)	$ 58,931
	Mobile Homes	5,894	0.838	0.114	(0.012)	$ 661,324
Renters - Total		**37,851**	**5.386**	**0.699**	**(0.088)**	**$ 5,498,447**
	Single Family	23,008	3.547	0.462	(0.059)	$ 3,445,880
	Multi Family	14,446	1.556	0.198	(0.025)	$ 1,814,787
	Mobile Homes	397	0.283	0.039	(0.004)	$ 237,779
Electric Customers (only)						
Owners - Total		**8,770**	**35.418**	**4.391**	**(0.266)**	**$ 62,249,797**
	Single Family	7,411	31.614	3.892	(0.253)	$ 55,546,828
	Multi Family	87	0.192	0.022	(0.001)	$ 335,296
	Mobile Homes	1,272	3.612	0.477	(0.012)	$ 6,367,673
Renters - Total		**8,399**	**19.908**	**2.452**	**(0.061)**	**$ 31,878,299**
	Single Family	4,564	14.300	1.781	(0.075)	$ 22,158,534
	Multi Family	3,395	5.394	0.642	0.016	$ 9,379,279
	Mobile Homes	440	0.215	0.029	(0.001)	$ 340,486
Gas Customers (only)						
Owners - Total		**5,199**	**0.011**	**0.002**	**0.062**	**$ 6,204,721**
	Single Family	4,475	0.010	0.001	0.055	$ 5,481,408
	Multi Family	32	-	-	0.000	$ 19,965
	Mobile Homes	692	0.002	0.000	0.006	$ 703,348
Renters - Total		**2,678**	**0.006**	**0.001**	**0.028**	**$ 1,806,959**
	Single Family	1,595	0.003	0.000	0.019	$ 1,322,536
	Multi Family	1,042	0.003	0.001	0.009	$ 459,462
	Mobile Homes	41	-	-	0.000	$ 24,961
Gas and Electric Total		106,673	68.95	8.60	(0.47)	$ 114,537,807
Multifamily Common Area Bldgs. - Total		-	-	-	0	$ -
Totals:		**106,673**	**68.951**	**8.595**	**(0.471)**	**$ 114,537,807**

1 Ordering Paragraph 34 of D.14-08-030 adopts the 2013 ESA Impact Evaluation. The results from that study were used in this Annual Report.

Tables 4B - Penetration History

Year	Homes Treated[1]	Ineligible & Unwilling[2]	Estimated Eligible in Current Year[3]	Current Year Penetration Rate for Homes Treated[4]
2002	70,683			
2003	47,271			
2004	48,456			
2005	57,700			
2006	66,043			
2007	63,319			
2008	61,034			
2009	81,308			
2010	133,329			
2011	128,071			
2012	115,229			
2013	123,566			
2014	123,539			
2015	100,573			
2016	74,319			
2017 [1]	51,442	166,682	1,762,588	3.2%
2018 [1]	35,280	123,499	1,689,909	2.3%
2019 [1]	42,490	67,500	1,592,402	2.8%
2020 [1]				
Total Homes Treated since 2002 [1]	**1,423,652**	**67,500**	**1,592,402**	**93.4%**

1 Homes treated since 2002 are reported to track progress toward meeting the 2020 Programmatic Initiative. Beginning in 2017, IOUs were allowed to re-treat customer homes that had been treated by the ESA Program since 2002, although these homes do not count toward the 2020 goal. For 2017-2020: This cumulative total includes only the First Touch homes treated by PG&E (and does not include previously counted Go-Back homes). Additionally, this total does not include the homes treated by CSD's LIHEAP program that are allowed to count towards PG&E's 2020 goal.

2 Customers that were ineligible, unwilling, or infeasible to participate. Estimate is 40% of the total remaining eligible population (Column D minus Column B), based on the 60% remaining Willing and Feasible to Participate (WFTP) factor authorized in D.16-11-022 and D.17-12-009 for the 2017-2020 cycle (40% of the 168,750 remaining homes to be treated is 67,500). Per the Commission authorized methodology, the WFTP factor is applied to the escalated 2020 estimated eligible population. On this table, there is no escalation, and it is applied to the remaining 2019 estimated eligible population, updated annually by Athens Research from census data.

3 Based on Attachment F of D.12-08-044, D.14-08-030, and Ordering Paragraph 79 of D.16-11-022. Total eligibility shown in this column is escalated Athens Research ESA eligible households for 2019, and does not deduct homes treated by CSD's LIHEAP program, as authorized by the Commission.

4 Penetration is percent of customers treated (Column B) relative to the total remaining eligible customers (Column D minus Column B) less the unwilling/ineligible customers (Column C): B/(D-C). This calculation is consistent with PG&E's methodology for estimating customers willingness / unwillingness to participate as authorized by the Commission, except that it is not applied to an escalated estimated 2020 eligibility and does not discount homes treated by CSD's LIHEAP program. PG&E updated WFTP forecasts in its Mid-Cycle Update Advice Letter in July 2018.

Table 4C - Households in Shared Service Territory

Year	Utility in Shared Service Territory	Eligible Households in Shared Service Territory	Eligible households treated by both utilities in shared service territory
2019	SCE	5,458	4
2019	SoCalGas	96,748	4,417

[*] Summary data which includes ESA Program, CSD Leveraging, and MF efforts.

	A	B	C	D	E	F	G
1	**ESA Table 5 - ESA Direct Purchases & Installation Contractors** **Pacific Gas and Electric Company** **Program Year 2019**						
2			**Contractor Type (Check one or more if applicable)**				**2019 Annual Expenditures[1]**
3	**Contractor**	**County**	**Private**	**CBO**	**WMDVBE**	**LIHEAP**	
4	**Implementer 1**						
5	ARCA Recycling, INC.	Alameda Contra Costa Marin Napa San Francisco	x				$ 464,223
6	California Builder Appliances, Inc. dba Monark of California	Alameda Contra Costa Marin Napa San Francisco	x				$ 2,295,923
7	Community Energy Services Corporation	Alameda Contra Costa Marin		x			$ 22,490
8	Community Housing Opportunities Corporation (CHOC)	Contra Costa Napa		x			$ 2,641,285
9	El Concilio of San Mateo County	San Francisco		x			$ 9,952
10	Energy Efficiency, Inc. dba Synergy EEI	Alameda Contra Costa San Francisco Marin	x		x		$ 10,763,708
11	Highlands Diversified, Inc. dba Highlands Trade Partners	Alameda	x		x		$ 3,264,150
12	Quality Conservation Services Inc. (QCS)	Alameda Contra Costa	x				$ 12,868,092
13	Residential Weatherization, Inc	Napa San Francisco Contra Costa	x		x		$ 151,463
14	Sierra Weatherization Company Inc. dba Bo Enterprises	Alameda	x				$ 2,514,596
15	Silicon Valley Foundation, Inc.	Alameda	x		x		$ 335,569
16	Staples & Associates, Inc	Alameda Contra Costa	x				$ 1,017,570
17	Barker Heating and Cooling	Alameda Contra Costa Marin Napa San Francisco	x				$ 2,075,114
18	**Implementer 1 Total**						**$ 38,424,134**
19	**Implementer 2**						
20	Action Air Conditioning, Heating & Plumbing	Fresno Kings Madera	x				$ 627,120.65
21	American Eco Services	San Luis Obispo Santa Barbara	x		x		$ 1,909,491.02
22	American Insulation	San Joaquin Stanislaus	x		x		$ 2,246,221.61
23	Appliance Recycling Centers of America (ARCA)	San Joaquin Stanislaus Placer Sacramento Sutter Yolo Yuba	x				$ 177,703.94
24	Balanced Comfort	Fresno	x				$ 314,571.81
25	Barker Mechanical	San Mateo Santa Clara Solano Sonoma	x				$ 1,160,245.34
26	Sierra Weatherization Company Inc. dba Bo Enterprises	Santa Clara Santa Cruz	x				$ 5,033,035.60

	A	B	C	D	E	F	G
1	**ESA Table 5 - ESA Direct Purchases & Installation Contractors Pacific Gas and Electric Company Program Year 2019**						
2			**Contractor Type (Check one or more if applicable)**				**2019 Annual Expenditures[1]**
3	**Contractor**	**County**	**Private**	**CBO**	**WMDVBE**	**LIHEAP**	
27	Bright Ideas Construction	Madera Mariposa Merced San Joaquin Tuolumne	x				$ 5,945,574.97
28	Bright Ideas Mechanical	Madera Mariposa Merced San Joaquin Tuolumne	x				$ 123,096.25
29	Community Action Partnership of San Luis Obispo, Inc.	Monterey San Luis Obispo Santa Barbara Santa Cruz		x	x	x	$ 675,678.21
30	Carroll Co.	Fresno Humboldt Kings Madera Siskiyou Trinity Tulare	x		x		$ 9,827,101.06
31	Central Valley Opportunity Center, Inc.	Amador Calaveras San Joaquin Stanislaus Tuolumne					$ 2,503.24
32	CAA Butte	Butte Colusa Glenn Sutter Yuba		x		x	$ 340,742.72
33	Community Housing Opportunities Corporation (CHOC)	Sacramento San Joaquin Solano Yolo		x			$ 4,686,138.48
34	CWES, Inc	Fresno	x		x		$ 1,829,191.38
35	Eagle Systems International, DBA Synergy Companies	Fresno Sacramento	x				$ 10,540.25
36	El Concilio of San Mateo County	San Mateo Santa Clara		x			$ 346,361.24
37	Polvera Drywall of Riverside dba Empire Insulation	Madera San Luis Obispo San Joaquin Santa Barbara Stanislaus Sacramento Yolo	x		x		$ 5,818,097.31
38	Fresno Economic Opportunities Commission	Fresno		x	x	x	$ 762,352.71
39	Greener Solutions, Inc.	San Joaquin	x				$ 172,977.55
40	Highlands Diversified, Inc. dba Highlands Trade Partners	Fresno Kings Kern Merced San Joaquin Stanislaus San Mateo Tulare Tuolumne	x		x		$ 12,164,545.58
41	Kings Community Action Org	Kings		x		X	$ 7,614.72

	A	B	C	D	E	F	G
1	**ESA Table 5 - ESA Direct Purchases & Installation Contractors Pacific Gas and Electric Company Program Year 2019**						
2			**Contractor Type (Check one or more if applicable)**				**2019 Annual**
3	**Contractor**	**County**	**Private**	**CBO**	**WMDVBE**	**LIHEAP**	**Expenditures[1]**
42	Lovotti, Inc	Fresno Kern Kings Madera Mariposa Merced San Joaquin Solano Stanislaus Tulare Tuolumne	x				$ 3,695,676.57
43	California Builder Appliances, Inc. dba Monark of California	All Counties in Central Coast, Central Valley and Northern Regions plus Solano, San Mateo, and Santa Clara counties	x				$ 3,295,395.66
44	Pacific Coast Energy Conservation Services	Monterey San Luis Obispo Kern	x				$ 5,658,042.43
45	Project Go, Inc	Nevada Placer		x		x	$ 148,738.52
46	Proteus Inc	Fresno Kern Kings Tulare		x		X	$ 1,266,234.49
47	Quality Conservation Services Inc. (QCS)	San Bernardino Solano Sonoma	x				$ 2,459,782.09
48	Reliable Energy Management, Inc.	Kern San Bernardino San Luis Obispo Santa Barbara	x				$ 239,078.29
49	Residential Weatherization, Inc	Butte Colusa Glenn Lake Lassen Mendocino Nevada Placer Plumas Sacramento Sierra Shasta Tehama Sutter Yolo Yuba	x		x		$ 3,638,883.04
50	Salco Better Energy, Inc.	Colusa Glenn Mendocino Napa Shasta Sonoma Tehama Yolo	x				$ 4,167,150.90
51	Self Help Home Improvement	Shasta Tehama		x		x	$ 1,098,566.37
52	Silicon Valley Foundation, Inc	Santa Clara	x		x		$ 2,838,363.56

ESA Table 5 - ESA Direct Purchases & Installation Contractors
Pacific Gas and Electric Company
Program Year 2019

Contractor	County	Contractor Type (Check one or more if applicable)				2019 Annual Expenditures[1]
		Private	CBO	WMDVBE	LIHEAP	
Staples & Associates, Inc.	Alpine Amador Calaveras El Dorado Kern Monterey Nevada Placer Sacramento San Benito Santa Cruz	x				$ 9,888,462.82
Sundowner Insulation	Fresno San Joaquin Stanislaus San Luis Obispo	x				$ 3,692,223.97
Energy Efficiency Inc. dba Synergy EEI	Santa Clara San Mateo	x		x		$ 4,474,109.46
Ventura TV Video Appliance Center, Inc.	All Counties in the Central Coast, Central Valley and Northern regions	x				$ 4,601,270.35
West Coast Energy Conservation Construction Services Inc.	Monterey San Benito San Luis Obispo	x				$ -
AE3V dba Western Cooling	All Counties in the Central Valley, Central Coast, and Northern regions	x				$ 1,565,442.53
Winegard Energy	Fresno Kern Kings Madera Tulare	x				$ 6,770,219.98
Implementer 2 Total						**$ 113,678,547**
Program Total						**$ 152,102,681**

1 Annual Expenditures reflect invoices for projects paid in 2019. Table 1 and1A costs include labor and materials, accruals and cost corrections for 2019 only.

ESA Table 6 - ESA Installation Cost of Program Installation Contractors
Pacific Gas and Electric Company
Program Year 2019

	Unit of Measure	CBO/WMDVBE						Non-CBO/WMDVBE						2019 Program Total				
		Installations		Dwellings		Costs		Installations		Dwellings		Costs		Units Installed	Households	Costs	Cost/ Unit	Cost/ Household
		Units	%	Units	%	$	%	Units	%	Units	%	$	%					
Dwellings	Each																	
Appliances																		
High Efficiency Clothes Washer	Home	-	0%	-	0%	$ -	0%	3,367	100%	3,367	100%	$ 2,945,879	100%	3,367	3,367	$ 2,945,879	$ 874.93	$ 874.93
Refrigerators	Each	6	0%	6	0%	$ 4,881	0%	9,780	100%	9,780	100%	$ 7,956,047	100%	9,786	9,786	$ 7,960,928	$ 813.50	$ 813.50
Microwaves	Home	4,391	55%	4,391	55%	$ 406,665	55%	3,631	45%	3,631	45%	$ 336,279	45%	8,022	8,022	$ 742,944	$ 92.61	$ 92.61
Freezers	Each																	
Domestic Hot Water																		
Other Hot Water	Home	39,615	50%	39,615	50%	$ 3,063,084	50%	40,145	50%	40,145	50%	$ 3,104,064	50%	79,760	79,760	$ 6,167,148	$ 77.32	$ 77.32
Tank and Pipe Insulation	Home	4,301	47%	4,301	47%	$ 16,429	47%	4,886	53%	4,886	53%	$ 18,663	53%	9,187	9,187	$ 35,092	$ 3.82	$ 3.82
Water Heater Repair/Replacement	Home	572	37%	572	37%	$ 1,222,455	37%	988	63%	988	63%	$ 2,111,513	63%	1,560	1,560	$ 3,333,967	$ 2,137.16	$ 2,137.16
Thermostat-controlled Shower Valves (SCE)	Each																	
New - Combined Showerhead/TSV	Each																	
New - Heat Pump Water Heater	Each																	
New - Tub Diverter/ Tub Spout	Each	45	13%	105	30%	$ 3,340	13%	308	87%	248	70%	$ 22,859	87%	353	353	$ 26,198	$ 74.22	$ 74.22
Enclosure																		
Air Sealing / Envelope [1]	Home	33,592	54%	33,592	54%	$ 14,566,277	54%	28,867	46%	28,867	46%	$ 12,517,407	46%	62,459	62,459	$ 27,083,684	$ 433.62	$ 433.62
Attic Insulation	Home	1,789	63%	1,789	63%	$ 2,985,385	63%	1,073	37%	1,073	37%	$ 1,790,564	37%	2,862	2,862	$ 4,775,949	$ 1,668.75	$ 1,668.75
HVAC																		
Furnace Repair/Replacement	Home	620	34%	620	34%	$ 2,070,785	34%	1,180	66%	1,180	66%	$ 3,941,172	66%	1,800	1,800	$ 6,011,957	$ 3,339.98	$ 3,339.98
Room A/C Replacement	Home	665	46%	665	46%	$ 578,595	46%	786	54%	786	54%	$ 683,873	54%	1,451	1,451	$ 1,262,468	$ 870.07	$ 870.07
Central A/C Replacement	Home																	
Heat Pump Replacement	Home																	
Evaporative Coolers	Home	1,072	52%	1,072	52%	$ 768,177	52%	987	48%	987	48%	$ 707,267	48%	2,059	2,059	$ 1,475,444	$ 716.58	$ 716.58
Duct Testing and Sealing	Home	10,182	56%	10,182	56%	$ 7,061,518	56%	7,929	44%	7,929	44%	$ 5,498,996	44%	18,111	18,111	$ 12,560,514	$ 693.53	$ 693.53
New - Energy Efficient Fan Control	Home	497	7%	497	7%	$ 114,482	7%	7,129	93%	7,129	93%	$ 1,642,137	93%	7,626	7,626	$ 1,756,619	$ 230.35	$ 230.35
New - Prescriptive Duct Sealing	Home																	
Central A/C Tune up	Home	678	7%	678	7%	$ 242,012	7%	8,739	93%	8,739	93%	$ 3,119,391	93%	9,417	9,417	$ 3,361,404	$ 356.95	$ 356.95
New - Smart Thermostats	Each	210	42%	208	42%	$ 60,108	42%	295	58%	289	58%	$ 84,437	58%	505	497	$ 144,545	$ 286.23	$ 290.83
New - High Efficiency Forced Air Unit (HE FAU)	Home																	
New - A/C Time Delay	Home																	
Maintenance																		
Furnace Clean and Tune	Home																	
Lighting																		
Lighting (Occupancy Sensor)	Home	163	68%	163	68%	$ 16,546	68%	75	32%	75	32%	$ 7,613	32%	238	238	$ 24,160	$ 101.51	$ 101.51
New - LED Reflector Downlight Retrofit Kits	Each																	
LED Diffuse A-Lamps	Each	426,274	51%	40,670	49%	$ 3,476,146	51%	413,845	49%	42,833	51%	$ 3,374,791	49%	840,119	83,503	$ 6,850,936	$ 8.15	$ 82.04
LED Reflector Bulbs (BR)	Each	38,882	48%	6,232	49%	$ 335,183	48%	42,780	52%	6,469	51%	$ 368,786	52%	81,662	12,701	$ 703,969	$ 8.62	$ 55.43
LED Torchieres	Each	14,631	43%	9,831	42%	$ 815,813	43%	19,421	57%	13,326	58%	$ 1,082,899	57%	34,052	23,157	$ 1,898,712	$ 55.76	$ 81.99
LED Exterior Hardwired Fixtures	Each	37,384	46%	17,152	46%	$ 2,115,856	46%	44,549	54%	20,110	54%	$ 2,521,380	54%	81,933	37,262	$ 4,637,235	$ 56.60	$ 124.45
LED Interior Hardwired Fixtures	Each	165,099	47%	58,928	48%	$ 8,511,294	47%	186,655	53%	63,801	52%	$ 9,622,564	53%	351,754	122,729	$ 18,133,858	$ 51.55	$ 147.76
Miscellaneous																		
Pool Pumps	Home																	
Smart Power Strips - Tier 1	Home	8,251	41%	8,251	41%	$ 697,263	41%	11,647	59%	11,647	59%	$ 984,247	59%	19,898	19,898	$ 1,681,511	$ 84.51	$ 84.51
New - Smart Power Strips - Tier 2	Each	4,191	48%	4,191	48%	$ 465,407	48%	4,478	52%	4,478	52%	$ 497,278	52%	8,669	8,669	$ 962,686	$ 111.05	$ 111.05
Pilots																		
Customer Enrollment																		
Outreach & Assessment	Home													106,673	106,673	$ 21,331,086	$ 199.97	$ 199.97
In-Home Education	Home													106,673	106,673	$ 6,872,798	$ 64.43	$ 64.43

[1] Envelope and Air Sealing Measures may include outlet cover plate gaskets, attic access weatherization, door weatherstripping, caulking, and minor home repairs. Minor home repairs predominantly consist of door jamb repair / replacement, door repair, and window putty.
Note: Per D.00-07-020, if any utility has a single CBO or private contractor, such that this table would reveal confidential pricing information, the information will be submitted to the Commission, subject to Commission-approved confidentiality agreements.

	A	B	C	D	E
1	**ESA Table 7 - Expenditures Recorded by Cost Element** **Pacific Gas and Electric Company** **Program Year 2019**				
2	**ESA Program:**	**Labor [1]**	**Non-Labor [2]**	**Contractor [3]**	**Total**
3	**Energy Efficiency**				
4	Appliances			$ 12,088,454	$ 12,088,454
5	Domestic Hot Water			$ 10,090,845	$ 10,090,845
6	Enclosure			$ 33,442,721	$ 33,442,721
7	HVAC			$ 28,468,312	$ 28,468,312
8	Maintenance			$ -	$ -
9	Lighting			$ 33,700,890	$ 33,700,890
10	Miscellaneous			$ 2,698,842	$ 2,698,842
11	Customer Enrollment			$ 21,727,696	$ 21,727,696
12	In Home Education			$ 6,998,459	$ 6,998,459
13	Pilot			$ 115,936	$ 115,936
14	Implementation [4]			$ 6,823,401	$ 6,823,401
15	**Energy Efficiency TOTAL**			**$ 156,155,555**	**$ 156,155,555**
16					
17	Training Center	$ 225,615	$ 7,719	$ 687,306	$ 920,640
18	Inspections	$ 3,148,152	$ 11,382	$ 157,569	$ 3,317,102
19	Marketing and Outreach	$ 287,788	$ 235,845	$ 1,091,212	$ 1,614,844
20	Statewide Marketing Education and Outreach				$ -
21	Measurement and Evaluation Studies			$ 81,308	$ 81,308
22	Regulatory Compliance	$ 718,947	$ 2,848	$ 61,801	$ 783,596
23	General Administration	$ 3,949,396	$ 412	$ 1,460,390	$ 5,410,199
24	CPUC Energy Division			$ 85,363	$ 85,363
25	Multi-Family Common Area Measures			$ 2,360,857	$ 2,360,857
26	Leveraging - CSD and MCE [4]			$ 288,868	$ 288,868
27					
28	**TOTAL PROGRAM COSTS**	**$ 8,329,898**	**$ 258,205**	**$ 162,430,230**	**$ 171,018,333**
29					
30	[1] Labor costs include any internal direct (administrative and/or implementation) costs (indirect costs are a separate line item), burdened by overhead, that represents person hours.				
31	[2] Non-Labor costs include all direct internal (administrative and/or implementation) costs (indirect costs are given as a separate line item) not covered under labor.				
32	[3] Contract costs include all outsourced costs (administrative and/or implementation). Contract costs do not need to be further broken out by labor/non-labor. This category includes agency employees.				
33	[4] This budget category includes the primary administrative fee for Implementer(s).				
34	Note: This table is consistent with costs reflected on ESA Table 1 and Table 1A, and includes total program costs from both authorized costs (Table 1) and authorized costs from unspent funding (Table 1A).				

ESA Table 8 - ESA Homes Unwilling / Unable to Participate [1]
Pacific Gas and Electric Company
Program Year 2019

ESA Program

	Reason Provided						
County	Customer Unwilling/Declined Program Measures	Customer Unavailable - Scheduling Conflicts	Hazardous Environment (unsafe/unclean)	Landlord Refused to Authorize Participation	Household Income Exceeds Allowable Limits	Unable to Provide Required Documentation	Other Infeasible/ Ineligible
ALAMEDA	349	4442	23	234	122	174	430
ALPINE	0	0	0	0	0	0	0
AMADOR	8	143		26	1	1	6
BUTTE	45	610	113	47	38	4	64
CALAVERAS	8	172	0	6	2	1	4
COLUSA	26	131	0	19	5	0	22
CONTRA COSTA	224	3137	27	998	215	190	578
EL DORADO	29	327		45	15	4	9
FRESNO	482	1891	13	231	172	178	679
GLENN	36	138		24	12	0	36
HUMBOLDT	38	249		10	15	0	42
KERN	316	3223	22	557	196	35	599
KINGS	77	237	1	26	7	26	18
LAKE	1	824	0	0	7	0	0
LASSEN	1	15	0	0	4	0	0
MADERA	129	516	2	43	18	27	184
MARIN	8	689	1	14	7	0	28
MARIPOSA	11	18	0	3	3	0	10
MENDOCINO	66	298	3	75	2	0	18
MERCED	173	1128	7	63	37	5	295
MONTEREY	258	987	140	161	47	184	119
NAPA	21	289	0	158	19	21	27
NEVADA	11	286	2	34	4	48	8
PLACER	37	570	8	90	77	23	27
PLUMAS	3	80	3	1	3	0	0
SACRAMENTO	1145	2420	9	1500	91	32	236
SAN BENITO	39	169	0	7	6	83	11
SAN BERNARDINO	1	14	0	0	0	0	0
SAN FRANCISCO	139	1631	10	97	22	35	128
SAN JOAQUIN	741	2430	35	836	136	11	437
SAN LUIS OBISPO	84	298	6	51	35	1	72
SAN MATEO	20	1193	4	40	9	2	25
SANTA BARBARA	100	411	2	79	18	1	33
SANTA CLARA	82	2309	3	165	23	12	105
SANTA CRUZ	65	312	0	17	7	16	13
SHASTA	117	634	25	57	95	50	138
SIERRA	0	5	0	0	0	0	0
SISKIYOU	0	0	0	0	0	0	0
SOLANO	98	1113	12	1071	102	123	200
SONOMA	91	939	3	195	37	87	51
STANISLAUS	671	1137	13	479	63	3	196
SUTTER	25	630	1	15	24	3	36
TEHAMA	64	321	11	72	21	17	72
TRINITY	0	0	0	1	0	0	1
TULARE	56	141		48	4	43	15
TUOLUMNE	13	75	1	11	2	0	14
YOLO	187	580	5	284	51	3	85
YUBA	31	429	1	31	9	0	37
Total	**6,126**	**37,591**	**506**	**7,921**	**1,783**	**1,443**	**5,108**

[1] The data in this table shows the number of households that did not qualify or declined to participate at the referral pre-assessment stage. Households that did not qualify or declined to participate at the time of the physical home assessment are not included.

	A	B	C	D	E	F	G
1	**ESA Table 9 - Life Cycle Bill Savings by Measure Pacific Gas and Electric Company Program Year 2019**						
2	**Measure Description**		**2019 Number Installed**	**Per Measure Electric Impact (kWh)**	**Per Measure Gas Impact (Therms)**	**Effective Useful Life (EUL)**	**2019 Total Measure Life Cycle Bill Savings**
3	**Appliances**						
4	High Efficiency Clothes Washer	Home	3,367	20,882	62,650	11	$ 610,693
5	Refrigerators	Each	9,786	5,402,305	-	15	$ 7,591,077
6	Microwaves	Home	8,022	(131,592)	12,759	15	$ (34,335)
7	Freezers	Each					
8	**Domestic Hot Water**						-
9	Other Hot Water	Home	79,760	550,174	404,434	8	$ 306,355
10	Tank and Pipe Insulation	Home	9,187	39,771	37,504	8	$ 3,408,422
11	Water Heater Repair/Replacement	Home	1,560	-	11,430	15	$ 134,891
12	Thermostat-controlled Shower Valves (SCE)	Each					
13	New - Combined Showerhead/TSV	Each					
14	New - Heat Pump Water Heater	Each					
15	New - Tub Diverter/ Tub Spout	Each	353	30	581	8	$ 4,243
16	**Enclosure**						
17	Air Sealing / Envelope	Home	62,459	183,866	64,466	9	$ 690,172
18	Attic Insulation	Home	2,862	27,533	129,905	20	$ 1,902,877
19	**HVAC**						
20	Furnace Repair/Replacement	Home	1,800	-	(43,991)	16	$ (543,004)
21	Room A/C Replacement	Home	1,451	(277,161)	-	15	$ (389,454)
22	Central A/C Replacement	Home					
23	Heat Pump Replacement	Home	-				
24	Evaporative Coolers	Home	2,059	774,305	-	15	$ 1,088,018
25	Duct Testing and Sealing	Home	18,111	(36,352)	114,911	25	$ 1,800,353
26	New - Energy Efficient Fan Control	Home	7,626	(704,848)	-	10	$ (730,073)
27	New - Prescriptive Duct Sealing	Home					
28	Central A/C Tune up	Home	9,417	(160,568)	-	15	$ (225,622)
29	New - Smart Thermostats	Each	505	107,881	12,642	9	$ 203,691
30	New - High Efficiency Forced Air Unit (HE FAU)	Home					
31	New - A/C Time Delay	Home					
32	**Maintenance**						
33	Furnace Clean and Tune	Home					
34	**Lighting**						
35	Lighting (Occupancy Sensor)	Home	238	6,854	-	8	$ 5,919
36	New - LED Reflector Downlight Retrofit Kits	Each					
37	LED Diffuse A-Lamps	Each	840,119	25,432,902	(581,968)	16	$ 30,195,713
38	LED Reflector Bulbs (BR)	Each	81,662	3,792,720	(89,529)	16	$ 4,469,135
39	LED Torchieres	Each	34,052	2,404,026	(54,802)	16	$ 2,856,795
40	LED Exterior Hardwired Fixtures	Each	81,933	6,358,410	-	16	$ 9,345,076
41	LED Interior Hardwired Fixtures	Each	351,754	24,501,017	(551,898)	16	$ 29,197,268
42	**Miscellaneous**						
43	Pool Pumps	Home					
44	Smart Power Strips - Tier 1	Home	19,898	-	-	5	$ -
45	New - Smart Power Strips - Tier 2	Each	8,669	658,844	-	5	$ 378,803
46	**Pilots**						
47							
48							
49	**Total**			**68,951,001**	**(470,906)**		**$ 92,267,012**
50							
51	**Total Homes Served By the Program**		106,673				
52	**Life Cycle Bill Savings Per Home**						$ 865
53							
54	[1] Energy savings are from: DNV-GL. ESA Program Impact Evaluation PY 2015-2017 Phase 2, Final Results. April 26, 2019. See: https://pda.energydataweb.com/#!/documents/2173/view						

	A	B	C
1	**ESA Table 10 - Energy Rate Used for Bill Savings Calculations[1]** **Pacific Gas and Electric Company** **Program Year 2019**		
2	**Year**	**$/kWh**	**$/Therm**
3	2019	0.1254	1.0530
4	2020	0.2453	2.0605
5	2021	0.3601	3.0244
6	2022	0.4699	3.9465
7	2023	0.5750	4.8287
8	2024	0.6755	5.6728
9	2025	0.7716	6.4803
10	2026	0.8636	7.2529
11	2027	0.9516	7.9920
12	2028	1.0358	8.6991
13	2029	1.1163	9.3756
14	2030	1.1934	10.0228
15	2031	1.2671	10.6421
16	2032	1.3377	11.2345
17	2033	1.4052	11.8012
18	2034	1.4697	12.3435
19	2035	1.5315	12.8622
20	2036	1.5906	13.3586
21	2037	1.6471	13.8334
22	2038	1.7012	14.2877
23	2039	1.7530	14.7223
24	2040	1.8025	15.1381
25	2041	1.8498	15.5359
26	2042	1.8952	15.9165
27	2043	1.9385	16.2806
28			
29			
30	[1] For 2019, the average costs per kWh and therm, respectively, paid by ESA participants are shown. Costs are calculated using the CPUC discount rate of 7.66%.		

ESA Table 11 - Bill Savings Calculations by Program Year
Pacific Gas and Electric Company
Program Year 2019

Program Year	Program Costs	Program Lifecycle Bill Savings	Program Bill Savings/ Cost Ratio	Per Home Average Lifecycle Bill Savings
2011	$ 145,900,978	$ 58,889,388	0.40	$ 460
2012	$ 131,145,519	$ 44,191,560	0.34	$ 384
2013	$ 142,181,389	$ 54,007,801	0.38	$ 437
2014	$ 145,940,449	$ 53,008,314	0.36	$ 429
2015	$ 136,775,345	$ 63,956,471	0.47	$ 636
2016	$ 105,094,305	$ 52,052,655	0.50	$ 700
2017*	$ 122,778,059	$ 106,566,378	0.87	$ 1,224
2018	$ 122,576,966	$ 102,803,203	0.84	$ 1,207
2019	$ 168,368,608	$ 92,267,012	0.55	$ 865

* Increased bill savings in 2017 due to higher numbers of LED and smart power strip installations, as a result of measure caps removal, and lower actual vs forecasted LED costs.

Total Authorized	Electric	Gas	Total Expenditures	Variance Electric	Variance Gas	Variance Total	(1) Shift of Current Year Authorized Electric	(1) Shift of Current Year Authorized Gas	(1) Shift of Current Year Authorized Total	(2) Shift of Carry Forward Electric	(2) Shift of Carry Forward Gas	(2) Shift of Carry Forward Total	(3) Shift of Carry Back Electric	(3) Shift of Carry Back Gas	(3) Shift of Carry Back Total	Total Shifted Gas/ Electric[2]	% of Authorized Total	Fund Shifting Source 1. Current Year Authorized 2. Carried Forward 3. Carried Back	To/From Year	Fund Shift Description	Authorization
ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	($x,xxx)	x%				G-xxxx, D.xx- xx-xxx
9,842,512	$ 11,626,596	$ 461,859	$ 12,088,454	$ (2,092,211)	$ (153,732)	$ (2,245,942)	$ 113,031	$ 153,732	$ 266,763	$ 1,979,179	$ -	$ 1,979,179	$ -	$ -	$ -	$ 2,245,942	1%	1. Current Year Authorization 2. Carried Forward 3.	1. To 2019 2. From 2018 3.	1. From Enclosure Electric to Appliance Electric 2. Carry forward unspent budget from 2018 3.	1. D.16-11-022 2. D.16-11-022 3.
8,383,433	$ 392,791	$ 9,698,054	$ 10,090,845	$ 162,547	$ (1,869,959)	$ (1,707,412)	$ (218,391)	$ (366,665)	$ (585,055)	$ 104,219	$ 2,236,623	$ 2,340,842	$ -	$ -	$ -	$ 1,755,787	1%	1. Current Year Authorization 2. Carried Forward 3.	1. To 2019 2. From 2018 3.	1. From Domestic Hot Water Electric/Gas to Miscellaneous Electric, Appliance Gas, HVAC Gas 2. Carry forward unspent budget from 2018 3.	1. D.16-11-022 2. D.16-11-022 3.
36,362,000	$ 6,019,690	$ 27,423,032	$ 33,442,721	$ 525,470	$ 2,393,808	$ 2,919,278	$ (113,031)	$ (6,453,393)	$ (6,566,424)	$ 1,163,795	$ 4,059,585	$ 5,223,380	$ -	$ -	$ -	$ (1,343,045)	-1%	1. Current Year Authorization 2. Carried Forward 3.	1. To 2019 2. From 2018 3.	1. From Enclosure Electric to Appliance Electric 2. Carry forward unspent budget from 2018 3.	1. D.16-11-022 2. D.16-11-022 3.
46,333,321	$ 9,479,707	$ 12,469,789	$ 21,949,497	$ 33,171,372	$ (8,787,548)	$ 24,383,824	$ -	$ 6,666,326	$ 6,666,326	$ 1,830,689	$ -	$ 1,830,689	$ -	$ 2,121,222	$ 2,121,222	$ 10,618,237	6%	1.Current Year Authorization 2.Carried Forward 3. Carried Back	1.To 2019 2. From 2018 3.From 2020	1.From Domestic Hot Water Gas and Enclosure Gas to HVAC Gas 2. Carry forward unspent budget from 2018 3. From 2020 HVAC Gas to 2019 HVAC Gas	1. D.16-11-022 2. D.16-11-022 3. D.16-11-022
-			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0%	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.
33,294,339	$ 33,700,890		$ 33,700,890	$ (406,551)	$ -	$ (406,551)	$ -	$ -	$ -	$ 2,064,151	$ -	$ 2,064,151	$ -	$ -	$ -	$ 2,064,151	1%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
2,293,586	$ 2,698,842		$ 2,698,842	$ (405,256)	$ -	$ (405,256)	$ 218,391	$ -	$ 218,391	$ 186,865	$ -	$ 186,865	$ -	$ -	$ -	$ 405,256	0%	1. Current Year Authorization 2. Carried Forward 3.	1. To 2019 2. From 2018 3.	1. From Domestic Hot Water Electric to Miscellaneous Electric 2. Carry forward unspent budget from 2018 3.	1. D.16-11-022 2. D.16-11-022 3.
21,786,389	$ 15,100,748	$ 6,626,947	$ 21,727,696	$ 40,792	$ 17,902	$ 58,694	$ -	$ -	$ -	$ 1,965,696	$ 1,423,435	$ 3,389,131	$ -	$ -	$ -	$ 3,389,131	2%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
4,678,342	$ 4,490,155	$ 1,970,500	$ 6,460,655	$ (1,238,707)	$ (543,605)	$ (1,782,313)	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,238,707	$ 543,605	$ 1,782,313	$ 1,782,313	1%	1. 2. 3. Carried Back	1. 2. 3. From 2020	1. 2. 3. From 2020 In Home Education Electric/Gas to 2019 In Home Education Electric/Gas	1. 2. 3. D.16-11-022
109,000	$ 30,564	$ 18,106	$ 48,670	$ 78,436	$ (18,106)	$ 60,330	$ -	$ -	$ -	$ 25,609	$ 21,252	$ 46,861	$ -	$ -	$ -	$ 46,861	0%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
6,711,489	$ 4,632,582	$ 2,033,004	$ 6,665,585	$ 31,903	$ 14,001	$ 45,904	$ -	$ -	$ -	$ 719,816	$ 521,246	$ 1,241,062	$ -	$ -	$ -	$ 1,241,062	1%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0%	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.
169,794,411	$ 88,172,565	$ 60,701,290	$ 148,873,855	$ 29,867,796	$ (8,947,240)	$ 20,920,556	$ 0	$ 0	$ 0	$ 10,040,019	$ 8,262,141	$ 18,302,160	$ 1,238,707	$ 2,664,827	$ 3,903,535	$ 22,205,695	12%				
1,105,878	$ 639,845	$ 280,795	$ 920,640	$ 128,740	$ 56,497	$ 185,237	$ -	$ -	$ -	$ 150,644	$ 109,087	$ 259,731	$ -	$ -	$ -	$ 259,731	0%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
4,253,055	$ 2,305,386	$ 1,011,716	$ 3,317,102	$ 650,488	$ 285,466	$ 935,953	$ -	$ -	$ -	$ 214,123	$ 155,056	$ 369,179	$ -	$ -	$ -	$ 369,179	0%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
2,350,306	$ 1,122,317	$ 492,528	$ 1,614,844	$ 511,146	$ 224,316	$ 735,461	$ -	$ -	$ -	$ 238,047	$ 172,378	$ 410,425	$ -	$ -	$ -	$ 410,425	0%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
-			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
193,000	$ 56,509	$ 24,799	$ 81,308	$ 77,626	$ 34,066	$ 111,692	$ -	$ -	$ -	$ 25,366	$ 18,369	$ 43,735	$ -	$ -	$ -	$ 43,735	0%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
771,283	$ 537,649	$ 235,947	$ 773,596	$ (1,608)	$ (706)	$ (2,313)	$ -	$ -	$ -	$ 94,767	$ 68,625	$ 163,392	$ -	$ -	$ -	$ 163,392	0%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
6,170,539	$ 3,584,994	$ 1,573,271	$ 5,158,264	$ 703,531	$ 308,744	$ 1,012,275	$ -	$ -	$ -	$ 702,618	$ 508,793	$ 1,211,411	$ -	$ -	$ -	$ 1,211,411	1%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
57,222	$ 59,327	$ 26,036	$ 85,363	$ (19,558)	$ (8,583)	$ (28,141)	$ -	$ -	$ -	$ 16,322	$ 11,819	$ 28,141	$ 3,236	$ (3,236)	$ -	$ 28,141	0%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
184,695,693	$ 96,478,592	$ 64,346,381	$ 160,824,974	$ 31,918,160	$ (8,047,440)	$ 23,870,720	$ 0	$ 0	$ 0	$ 11,481,905	$ 9,306,269	$ 20,788,173	$ 1,241,944	$ 2,661,591	$ 3,903,535	$ 24,691,708	13%				
209,387,402	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -					

heses ($xxx).

approval from AL 3990-G/5329-E A/B on January 4, 2019
4 from Domestic Hot Water Gas to Appliance Gas due to overspend

on Eletric/Gas

ESA Table 12a - Fund Shifting

Total Authorized	Expenditures Electric	Expenditures Gas	Total Expenditures	(Shift) or Carried Forward Variance Electric	Variance Gas	Variance Total	FUND SHIFT AMOUNT Among Categories within Program Year 1-3 (1) Shift of Current Year Authorized Electric	(1) Shift of Current Year Authorized Gas	(1) Shift of Current Year Authorized Total	Carry Forward from 2018 (2) Shift of Carry Forward Electric	(2) Shift of Carry Forward Gas	(2) Shift of Carry Forward Total	Carry Back from 2020 (3) Shift of Carry Back Electric	(3) Shift of Carry Back Gas	(3) Shift of Carry Back Total	Total Shifted Gas/ Electric[2]	% of Authorized Total	Fund Shifting Source 1. Current Year Authorized 2. Carried Forward 3. Carried Back	To/From Year	Fund Shift Description	Authorization
ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	ex. $x,xxx	($x,xxx)	x%				G-xxxx, D.xx- xx-xxx
8,300,033	$ -	$ -	$ -	$ 8,300,033	$ -	$ 8,300,033	$ -	$ -	$ -	$ 6,721,671	$ -	$ 6,721,671	$ -	$ -	$ -	$ 6,721,671	15%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
4,607,221	$ -	$ -	$ -	$ 1,107,222	$ 3,500,000	$ 4,607,221	$ -	$ (3,500,000)	$ (3,500,000)	$ -	$ -	$ -	$ -	$ -	$ -	$ (3,500,000)	-2%	1. Current Year Authorization 2. Carried Forward 3.	1. To 2019 2. From 2018 3.	1. From Domestic Hot Water Gas to HVAC Gas 2. Carry forward unspent budget from 2018 3.	1. D.16-11-022 2. D.16-11-022 3.
15,442,952	$ -	$ 6,518,815	$ 6,518,815	$ 12,648,079	$ (3,723,942)	$ 8,924,137	$ -	$ 3,500,000	$ 3,500,000	$ 6,000,000	$ 223,942	$ 6,223,942	$ -	$ -	$ -	$ 9,723,942	5%	1. Current Year Authorization 2. Carried Forward 3.	1. To 2019 2. From 2018 3.	1. From Domestic Hot Water Gas to HVAC Gas 2. Carry forward unspent budget from 2018 3.	1. D.16-11-022 2. D.16-11-022 3.
-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0%	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.
408,948	$ 366,518	$ 171,286	$ 537,804	$ (82,299)	$ (46,557)	$ (128,856)	$ -	$ -	$ -	$ 82,299	$ 46,557	$ 128,856	$ -	$ -	$ -	$ 128,856	0%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
299,973	$ 82,064	$ 75,751	$ 157,815	$ 126,417	$ 15,740	$ 142,158	$ -	$ -	$ -	$ 111,530	$ 68,461	$ 179,991	$ -	$ -	$ -	$ 179,991	0%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
11,350,000	$ 1,227,646	$ 1,133,211	$ 2,360,857	$ 6,660,604	$ 2,328,539	$ 8,989,143	$ -	$ -	$ -	$ 832,639	$ 583,434	$ 1,416,073	$ -	$ -	$ -	$ 1,416,073	3%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
2,192,102	$ 150,212	$ 138,657	$ 288,868	$ 1,373,299	$ 529,934	$ 1,903,233	$ -	$ -	$ -	$ 423,806	$ 306,894	$ 730,701	$ -	$ -	$ -	$ 730,701	2%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0%	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.
90,000	$ -	$ -	$ -	$ 62,550	$ 27,450	$ 90,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0%	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.
647,000	$ 5,200	$ 4,800	$ 10,000	$ 627,465	$ 9,535	$ 637,000	$ -	$ -	$ -	$ 442,167	$ 96,616	$ 538,783	$ -	$ -	$ -	$ 538,783	1%	1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.
																		1. 2. Carried Forward 3.	1. 2. From 2018 3.	1. 2. Carry forward unspent budget from 2018 3.	1. 2. D.16-11-022 3.

	A	B
1	**ESA Table 13 - Categorical and Other Enrollment [1]** **Pacific Gas and Electric Company** **Program Year 2019**	
2	**Type of Enrollment**	**Number of Enrollment**
3	Bureau of Indian Affairs General Assistance	2
4	CalFresh/SNAP (Food Stamps)	3,558
5	CalWORKs (TANF) or Tribal TANF	365
6	Disabled	2
7	Head Start Income Eligible (Tribal Only)	5
8	Low Income Home Energy Assistance Program (LIHEAP)	106
9	Medicaid/Medi-Cal	10,508
10	Medi-Cal for Families (Healthy Families A & B)	4,012
11	National School Lunch Program (NSLP)	747
12	Supplemental Security Income (SSI)	5,603
13	Women Infants and Children (WIC)	6,613
14	Categorical - Multiple	887
15	CARE Income Qualified	2,368
16	Property Owner Income Certified	6,604
17	Targeted Self Certification	2,950
18	IOU	259
19	Standard Enrollment	62,084
20	**Total**	**106,673**
21		
22	[1] Does not include MF common area efforts.	
23	[2] Households that qualified for the program based on participation in more than one public assistance program.	

ESA Table 14 - Leveraging & Integration
Pacific Gas and Electric Company
Program Year 2019

Coordination Type [1]	Partner	Brief Description of Effort	Relationship outside the IOU?	MOU Present?	Amount of Dollars Saved [2]	Amount of Energy Savings [3]	Other Measurable Benefits [3]	Enrollments Resulting from Leveraging Effort [4]	Methodology [5]	Meets all Criteria	If not, Explain
Program Coordination	CAA Butte	Coordination with LIHEAP and DOE	Yes	Unknown	$ 219,365	Unknown	Unknown	40 enrollments as a result of LIHEAP and DOE leveraging.	Installation contractor provided dollars saved	N	Unknown amount of energy savings
Program Coordination	Community Housing Opportunities Corporation (CHOC)	Coordination with Alameda Municipal Power (AMP) and North Coast Energy Services	Yes	Yes	Unknown	Unknown	Unknown	7 enrollments forwarded to CSD for additional weatherization and or repairs and 1 enrollment forwarded to North Coast Energy Services for additional weatherization and or repairs	Unknown	N	Unknown amount of dollars saved and energy savings.
Program Coordination	Energy Efficiency, Inc. (EEI)	Coordination with Alameda Municipal Power (AMP)	Yes	Yes	Unknown	Unknown	Unknown	35 Enrollments for additional weatherization	Unknown	N	Unknown amount of dollars saved and energy savings.
Program Coordination	El Concilio	Coordination with Community Help and Awareness of Natural Gas and Electric Services Program (CHANGES) and Peninsula Minor Home Repair (PMHR)	Yes	Unknown	Unknown	Unknown	Unknown	99 enrollments as a result of CHANGES and PMHR leveraging.	Unknown	N	Unknown amount of dollars saved and energy savings.
Program Coordination	Empire	Coordination Modesto Irrigation District (MID), Turlock Irrigation District (TID)	Yes	Unknown	$ 115,916	Unknown	Unknown	161 enrollments as a result of MID & TID leveraging.	Installation contractor provided dollars saved	N	Unknown amount of energy savings.
Program Coordination	Residential Weatherization Inc.	Coordination with Yuba County Water Program	Yes	Unknown	$ 28,124	Unknown	Unknown	201 enrollments as a result of Yuba County Water Program leveraging.	Installation contractor provided dollars saved	N	Unknown amount of energy savings.
Program Coordination	Self Help Home Improvement (SHIP)	Coordination with LIHEAP and Redding Electric Utility (REU)	Yes	Yes	$ 17,435	Unknown	Unknown	15 enrollments as a result of LIHEAP leveraging. 708 PG&E gas customer homes rec'd electric measures from REU's weatherization program.	Installation contractor provided dollars saved	N	Dollars reflect LIHEAP leveraging. Do not have the dollar impact for REU. Unknown amount of energy savings.
Program Coordination	Winegard Energy	Coordination with Southern California Edison	Yes	Yes	Unknown	Unknown	Unknown	38 customers referred into LIEE Gas Co.	Unknown	N	Unknown amount of dollars saved and energy savings.
Program Coordination	ESA Energy-Water Leveraging Program	This purpose of this effort is to allow ESA contractors to offer water measures, which are paid by Water Agencies, while they treat ESA customers. Water Agencies select from a standardized menu of options to customer their water offerings that can include replacing toilets, leak detection, meter checks, etc. Water offerings are paid by each Water agency.	Yes	Yes	Unknown	~15,700 kWh/year ~14.2 million gallons of water	TBD	2,600 homes rec'd water measures	Unknown	N	Unknown amount of dollars saved.
Program Coordination	ESA/EE Residential Programs	PG&E launched its SPOC service in 2017 as a resource for multifamily customers to learn about program opportunities applicable to multifamily properties. In 2019, PG&E SPOC expanded services and website tracking to increase SPOC's presence as a resource for the multifamily market	Yes	Unknown	Unknown	Unknown	Unknown	SPOC had 182 referrals across 12 programs; MUP, ESA CAM, ESA, CHES, LIWP, BAMBE, EV, OBF, CSI, Cooling Optimizer Program, SGIP, CMFNH. Of the 182 referrals, 79 resulted in applications across 5 programs. 2 EE MUP, 69 CAM, 6 BAMBE, 1 EV, 1 OBF	Unknown	N	Unknown amount of dollars saved and energy savings.

	A	B	C	D	E	F	G	H	I	J	K	L
13	Leveraging	Redwood Community Action Agency	Through Refrigerator Leveraging Contracts with PG&E, LIHEAP agencies in PG&E's service area that are not ESA contractors can receive ESA Program funding to purchase refrigerators for qualified PG&E electric customers, thus freeing up more LIHEAP funding to provide other services to low income households. PG&E counts these refrigerators and their savings, but not the CSD "treated" home.	Yes	Yes	$ 2,400	2.280 kWh 0 kW	Unknown	3 ESA refrigerators provided to LIHEAP customers.	Cost: PG&E provided 3 refrigerators Energy Savings: ESA refrigerator savings	Y	NA
14	Leveraging	GRID Alternatives	Electric IOUs shall provide the Single-family Affordable Solar Homes Program Administrator, current GRID Alternatives, with a monthly list of owner-occupied single-family households that have completed the Energy Savings Assistance (ESA) Program requirements of the California Alternate Rates for Energy (CARE) Program high usage process.	Yes	Unknown	Unknown	Unknown	Unknown	There were 170 ESA enrollments resulting from this leveraging effort and PG&E provided GRID 2,153 CARE High Usage referrals	Unknown	N	Unknown amount of energy savings
15	Leveraging	GRID Alternatives	Electric IOUs shall provide the Single-family Affordable Solar Homes Program Administrator, current GRID Alternatives, with a monthly list of referrals along with what installation measures were received in the homes, if any	Yes	Unknown	Unknown	Unknown	Unknown	There were 170 ESA enrollments resulting from this leveraging effort and PG&E provided GRID 491 referrals	Unknown	N	Unknown amount of energy savings
16	Interdepartmental Integration	ESA/ CHES Program	The Moderate Income Direct Install Program (MIDI), has been rebranded as Custom Home Energy Solutions (CHES) program, is focused on reaching moderate income, underserved, disadvantaged and/or hard to reach communities. This population is a large, underserved portion of the residential customer segment and represents a unique direct install energy efficiency opportunity for customers whose income exceeds ESA's income eligibility guidelines.	No	No	Unknown	N/A	Unknown	9,707	Unknown	N	Unknown amount of dollar savings
17	Interdepartmental Integration	Residential Newsletter	As part of the Residential Integrated Campaign, the Residential Newsletter is sent out monthly to over 2.8 million residential customers, with approximately 1.3 million receiving a version tailored to low income customers. The goal of this effort is to go beyond a transactional one-time interaction with our customers in exchange for a continued dialogue about energy efficiency and management. Emails were sent out monthly to general population and low-income customers	No	No	N/A	N/A	N/A	Unknown	N/A	N/A	Unknown amount of energy or dollar savings

18

19 [1] Leveraging, Interdepartmental integration, Program Coordination, Data Sharing, ME&O, etc.
20 [2] Leveraging and Integration efforts are measurable and quantifiable in terms of dollars saved by the IOU (Shared/contributed/donated resources, shared marketing materials, shared information technology, shared programmatic infrastructure, among others are just some
21 examples of cost and/or resource savings to the IOU).
22 [3] Annual Energy savings/benefits for measures installation in 2018. Leveraging efforts are measurable and quantifiable in terms of home energy benefits/ savings to the eligible households.
23 [4] Enrollment increases. Leveraging efforts are measurable and quantifiable in terms of program enrollment increases and/or customers served.
24 [5] Methodology used to calculate cost and/or resource savings.
25
26 Fields not applicable to specific efforts are marked "N/A"

	A	B	C	D	E	F
1	**ESA Table 15 - Lighting (CFLs) [4]** **Pacific Gas and Electric Company** **Program Year 2019**					
2	**ESA Program CFL Tracking Table**					
3	*CFL bulbs used within PG&E ESA program*					
4	**Bulb Name / Identification**	**Bulb Description (wattage, lumens)**	**Bulb Cost (material)**	**Admin Cost (overhead, contractor fee, marketing, etc.)**	**Total Bulb Cost (material + admin) [1]**	**AB 1109 Compliant? [2]**
5	CFL - Low	CFL - Low				
6	CFL - Medium	CFL - Medium				
7	CFL - High	CFL - High				
8						
9						

10	**Year**	**Number of Homes Treated in ESA Program**	**Number of Homes Provided CFLs [4]**	**Avg. # of CFL bulbs given per home**	**Est. total energy savings from installed CFLs [3]**
11	2009	81,308	69,970	4.57	5.12
12	2010	133,329	109,663	4.69	8.23
13	2011	128,071	105,849	4.69	7.95
14	2012	115,229	91,906	4.67	5.88
15	2013	123,566	92,655	4.56	5.84
16	2014	123,539	96,508	4.60	6.12
17	2015	100,573	79,887	4.93	6.30
18	2016	74,319	58,626	6.50	6.10
19	2017	87,052	17,684	7.59	2.15
20	2018	85,168	-	-	-
21	2019	106,673	-	-	-

22

23 [1] Bulb cost and admin cost were combined effective 2013.

24 [2] Compliant in regards to: 1) Do bulbs meet or exceed CEC energy efficiency standards for general purpose lighting?

25 Do all models comply with Europe's RoHS standards on toxicity?

26 [3] Ordering Paragraph 34 of D.14-08-030 adopts the 2013 ESA Impact Evaluation. The results from that study were used in this Annual Report.

27 [4] PG&E transitioned from CFLs to LEDs in 2017, and by mid-year was not installing any CFLs. This table does not include LEDs.

ESA Table 16 - "Add Back" Measures
Pacific Gas and Electric Company
Program Year 2019

Measure [1]	Climate Zone	Ratio of Benefits Over		Quantity Installed	Budget Impact of "Add Back"	Lifecycle Bill Savings Impact [2]
		ESACET	Resource TRC			
Air Sealing / Envelope (Group Measure)-E-MF	System	0.12	0.03	5,480	$2,376,256	$74,766
Attic Insulation - (Group)-G-MF	System	0.61	0.24	42	$70,087	$16,439
Attic Insulation - (Group)-G-SF	System	0.99	0.43	2,707	$4,517,294	$1,920,694
Furnace Repair or Rpl (Group Measure) -E-MF	System	0.00	0.00	-	$0	$0
Shower Heads and Faucet Aerators - (GROUP MEASURE)-E-MF	System	5.15	44.28	2,096	$922	$40,066
Shower Heads and Faucet Aerators - (GROUP MEASURE)-G-MF	System	4.42	106.12	13,494	$5,937	$618,163
Heater Pipe and Water Heater Insulation - (Group)-E-MF	System	0.10	0.06	108	$72,499	$4,471
Central AC Replacement-SF	System	0.00	0.00	-	$0	$0
Room AC Replacement - (Group Measure)-MF	System	1.70	(0.23)	8	$6,961	-$1,534
Room AC Replacement - (Group Measure)-MH	System	1.70	(0.23)	9	$7,831	-$1,725
Room AC Replacement - (Group Measure)-SF	System	1.54	(0.32)	1,434	$1,247,677	-$396,040
Duct Testing and Sealing - (Group Measure)-G-MF	System	0.48	0.00	20	$13,871	$0
Duct Testing and Sealing - (Group Measure)-E-MF	System	0.49	0.00	1	$694	$0
Duct Testing and Sealing - (Group Measure)-E-MH	System	0.19	(0.28)	40	$27,741	-$7,658
Duct Testing and Sealing - (Group Measure)-E-SF	System	0.19	(0.28)	308	$213,607	-$58,963
Duct Testing and Sealing - (Group Measure)-G-MH	System	0.26	0.17	2,048	$1,420,349	$243,466
Duct Testing and Sealing - (Group Measure)-G-SF	System	0.24	0.16	15,694	$10,884,253	$1,708,047
Water Heater - Repair Or Rpl (Group Measure)-G-MF	System	0.12	0.01	6	$12,823	$129
Water Heater - Repair Or Rpl (Group Measure)-G-MH	System	0.12	0.01	125	$267,145	$2,686
Water Heater - Repair Or Rpl (Group Measure)-G-SF	System	0.47	0.04	1,429	$3,053,999	$119,969

Notes:
[1] Based on Appendix H.1 and H.2 in D.12-08-044 and D.14-08-030.
[2] The avoided cost per kwh and therms is from table 10.

ESA Table 17 - ESA Expenditures for Pilots and Studies
Pacific Gas and Electric Company
Program Year 2019

	Authorized 2017-2020 Funding			Inception to Date (through December 31, 2019)			% of Budget Expensed		
	Electric	Gas	Total	Electric	Gas	Total	Electric	Gas	Total
Pilots									
Programmable Controllable Thermostat/ Smart Thermostat TOU [1]	$ 290,000	$ -	$ 290,000	$ 184,154	$ -	$ 184,154	64%	$ -	64%
Consumption Driven Weatherization [2]	$ 250,100	$159,900	$ 410,000	$ 206,580	$132,076	$ 338,655	83%	83%	83%
Total Pilots	**$540,100**	**$159,900**	**$700,000**	**$390,734**	**$132,076**	$ 522,810	**72%**	**83%**	**75%**
Studies									
Low Income Needs Assessment (LINA) Study [3]	$ 78,000	$ 72,000	$ 150,000	$ 77,966	$ 71,969	$ 149,936	100%	100%	100%
Load Impact Evaluation Study [4]	$ 85,800	$ 79,200	$ 165,000	$ 73,685	$ 68,017	$ 141,702	86%	86%	86%
Non Energy Benefits (NEB) Study [5]	$ 23,400	$ 21,600	$ 45,000	$ 23,400	$ 21,600	$ 45,000	100%	100%	100%
2017 Potential and Goals Study	$ 46,800	$ 43,200	$ 90,000	$ -	$ -	$ -	0%	0%	0%
Rapid Feedback Research and Analysis [6]	$ 104,000	$ 96,000	$ 200,000	$ 20,540	$ 18,960	$ 39,500	20%	20%	20%
Total Studies	**$338,000**	**$312,000**	**$650,000**	**$195,592**	**$180,546**	**$376,138**	58%	58%	58%

[1] PG&E's Advice Letter 5242-E was approved on April 27, 2018 and authorized $290,000 for the PCT pilot. The evaluation portion of this pilot was co-funded by PG&E, SCE, and SDG&E. Upon execution of the IOUs' co-funding agreement, PG&E will be retrieving $43,320 and $45,070 from SCE and SDG&E, respectively, for evaluation expenses from pilot inception thru Dec 2019.

[2] PG&E proposed the CDWx pilot in its 2015-2017 ESA Application, authorized in D.16-11-022, OP.144. In December 2017, PG&E requested and was granted an extension to implement this pilot so that CSD could be included in it. Pilot activities were completed in 2019.

[3] SCE is the contract manager of this co-funded statewide study, completed in 2019.

[4] SCG is the contract manager of this co-funded statewide study, completed in 2019. A final invoice in the amount of $12,246 was paid to SCG in January 2020 and is not reflected in the "Inception to Date" total.

[5] SDG&E is the contract manager of this co-funded statewide study, completed in 2019.

[6] In 2019, two projects were implemented using the Rapid Feedback Research and Analysis funding - "ESA Impact Evaluation - Savings Disaggregation" and "Household Hardship Reduction Indicators". Details are discussed in Section 1.11 of this report.

Note: Any required corrections/adjustments are reported herein and supersede results reported in prior months and may reflect YTD adjustments.

ESA Table 18 - Homes Receiving Second Refrigerators and In-Home Energy Education Only
Pacific Gas and Electric Company
Program Year 2019

Measures	Units	Received Refrigerator	Not eligible for Refrigerator Due to Less than Six Occupants [2]
Second Refrigerators [1]	Each	838	524

Measures	Units	Households that Only Received Energy Education [3]
In-Home Energy Education	Home	6,333

Households for My Energy/My Account Platform [4]		
Opt-Out	Already Enrolled	Opt-In
803	102,002	6,664

[1] PG&E implemented second refrigerators in 2018.
[2] Detailed information is limited for 2nd refrigerators unless the customer qualifies.
[3] D.16-11-022 allowed customers to receive energy education only. Customers flagged as Energy Education Only in 2019, may convert to a treated home in 2020.
[4] PG&E implemented My Energy/ My Account tracking in 2018.

	A	B	C	D	E	F	G	H
1	**PY 2019 CARE Annual Report**							
2	**CARE Table 1**							
3	**Overall Program Expenses**							
4	**Category**	**Overall Expenditures**		**Total**	**Authorized Budget**	**% of Budget Spent**	**Total Shifted [2]**	**Shifted to/from?**
5		**Electric**	**Gas**					
6	Outreach [1]	$ 5,643,513	$ 1,410,878	$ 7,054,392	$ 9,576,653	74%		
7	Processing, Certification, Recertification	$ 471,262	$ 117,816	$ 589,078	$ 2,088,796	28%		
8	Post Enrollment Verification	$ 766,935	$ 191,734	$ 958,669	$ 1,748,793	55%		
9	IT Programming	$ 399,744	$ 99,936	$ 499,680	$ 2,054,261	24%		
10	Cool Centers	$ 110,669	$ -	$ 110,669	$ 149,521	74%		
11	Pilots/CHANGES Program	$ 411,170	$ 102,792	$ 513,962	$ 527,869	97%		
12	Measurement & Evaluation	$ 77,710	$ 19,428	$ 97,138	$ 159,676	61%		
13	Regulatory Compliance [2]	$ 360,475	$ 90,119	$ 450,594	$ 1,125,679	40%	($38,022)	Shifted to CPUC Energy Division
14	General Administration	$ 604,842	$ 151,210	$ 756,052	$ 1,124,533	67%		
15	CPUC Energy Division	$ 132,818	$ 33,204	$ 166,022	$ 128,000	130%	$38,022	Shifted from Regulatory Compliance
16								
17	**TOTAL Program Costs [3]**	**$ 8,979,138**	**$ 2,217,117**	**$ 11,196,256**	**$ 18,683,781**	**60%**		
18								
19	CARE Rate Discount [4]	$ 525,905,795	$ 112,796,014	$ 638,701,809	$ 593,186,130	108%	$ 45,515,679	
20	Service Establishment Charge Discount							
21								
22	**TOTAL PROGRAM COSTS & CUSTOMER DISCOUNTS [4]**	**$ 534,884,934**	**$ 115,013,131**	**$ 649,898,065**	**$ 611,869,911**	**106%**		
23								
24	[1] Includes expenses for incremental CARE/FERA M&O efforts as approved in Non-Standard Disposition Letter re PGE AL 3990-G/5329-E, 3990-G-A/5329-E-A, and 3990-G-B/5329-E-B.							
25	[2] Includes authorized budget for Statewide End-Use Load Profile Vendor and associated internal IT start-up costs.							
26	[3] Program authorized budget per D.16-11-022 and Non-Standard Disposition Letter re PGE AL 3990-G/5329-E, 3990-G-A/5329-E-A, and 3990-G-B/5329-E-B has been updated to include $906,314 as authorized in the 2017 GRC Decision (D.) 17-05-013 - Decision Authorizing Pacific Gas and Electric Company's General Rate Case Revenue Requirement for 2017-2019. Actual employee benefit burden costs have been included in the program expenses.							
27	[4] Total program administrative expenses did not exceed the overall authorized budget. The CARE discount exceeded the authorized amount by $45,515,679. Per D.02-09-021, PG&E is authorized to recover the full value of the discount through the CARE two-way balancing account on an automatic pass-through basis. The information in the "Total Shifted" and "Shifted to/from?" column is for illustrative purposes only, to disclose how funds from the overall authorized budget can be shifted between categories per Section 20.3.3 in D.08-11-031.							

PY 2019 CARE Annual Report
CARE Table 2
Enrollment, Recertification, Attrition, & Penetration

Month	New Enrollment										Recertification				Attrition (Drop Offs)					Enrollment		Total CARE Participants	Estimated CARE Eligible	Penetration Rate % (W/X)
	Automatic Enrollment				Self-Certification (Income or Categorical)					Total New Enrollment (E+J)	Scheduled	Non-Scheduled (Duplicates)	Automatic	Total Recertification (L+M+N)	No Response [4]	Failed PEV	Failed Recertification	Other [5]	Total Attrition (P+Q+R+S)	Gross (K+O)	Net Adjusted (K-T)			
	Inter-Utility [1]	Intra-Utility [2]	Leveraging [3]	Combined (B+C+D)	Online	Paper	Phone	Capitation	Combined (F+G+H+I)															
January	0	3,462	0	3,462	13,979	4,234	1,044	113	19,370	22,832	30,095	8,634	8,933	47,662	n/a	3,173	6,114	11,021	20,308	70,494	2,524	1,378,527	1,446,414	95.3%
February	0	1,814	0	1,814	12,014	6,157	847	103	19,121	20,935	32,984	8,524	8,022	49,530	n/a	4,358	5,076	8,348	17,782	70,465	3,153	1,381,680	1,446,414	95.5%
March	0	3,679	0	3,679	12,089	6,228	846	69	19,232	22,911	25,815	8,877	21,538	56,230	n/a	2,676	6,484	12,197	21,357	79,141	1,554	1,383,234	1,446,414	95.6%
April	0	2,283	0	2,283	9,298	5,951	591	114	15,954	18,237	33,019	7,630	16,165	56,814	n/a	2,482	6,415	8,247	17,144	75,051	1,093	1,384,327	1,446,414	95.7%
May	0	2,473	0	2,473	8,275	3,289	499	86	12,149	14,622	34,700	6,331	11,666	52,697	n/a	4,441	6,240	12,819	23,500	67,319	-8,878	1,375,449	1,446,414	95.1%
June	0	1,987	0	1,987	11,895	6,337	889	70	19,191	21,178	32,123	7,338	8,215	47,676	n/a	1,208	6,249	17,126	24,583	68,854	-3,405	1,372,044	1,446,414	94.9%
July	0	2,159	0	2,159	10,719	5,212	766	75	16,772	18,931	30,604	7,627	10,904	49,135	n/a	2,665	4,836	2,643	10,144	68,066	8,787	1,380,831	1,446,414	95.5%
August	0	2,407	0	2,407	12,335	6,937	944	73	20,289	22,696	30,913	8,392	15,427	54,732	n/a	314	4,680	12,477	17,471	77,428	5,225	1,386,056	1,446,414	95.8%
September	0	0	0	0	13,369	4,310	690	64	18,433	18,433	24,723	12,258	0	36,981	n/a	6,342	5,314	9,338	20,994	55,414	-2,561	1,383,495	1,446,414	95.7%
October	0	2,948	0	2,948	10,421	5,236	624	73	16,354	19,302	27,414	8,499	14,556	50,469	n/a	6,847	6,487	8,606	21,940	69,771	-2,638	1,380,857	1,446,414	95.5%
November	0	2,226	0	2,226	8,043	3,073	480	58	11,654	13,880	20,497	6,575	10,479	37,551	n/a	219	5,273	7,166	12,658	51,431	1,222	1,382,079	1,446,414	95.6%
December	0	5,397	0	5,397	10,229	4,002	628	60	14,919	20,316	33,807	7,874	25,055	66,736	n/a	8,998	5,176	5,558	19,732	87,052	584	1,382,663	1,446,414	95.6%
YTD Total	**0**	**30,835**	**0**	**30,835**	**132,666**	**60,966**	**8,848**	**958**	**203,438**	**234,273**	**356,694**	**98,559**	**150,960**	**606,213**	**0**	**43,723**	**68,344**	**115,546**	**227,613**	**840,486**	**6,660**	**1,382,663**	**1,446,414**	**95.6%**

[1] Enrollments via data sharing between the IOUs.
[2] Enrollments via data sharing between departments and/or programs within the utility.
[3] Enrollments via data sharing with programs outside the IOU that serve low-income customers.
[4] PG&E counts attrition due to no response in the Failed PEV and Failed Recertification columns, respectively.
[5] Includes customers who closed their accounts, requested to be removed, or were otherwise ineligible for the program.

PY 2019 CARE Annual Report

CARE Table 3A

Post-Enrollment Verification Results (Model)

Month	Total CARE Households Enrolled	Households Requested to Verify[1]	% of CARE Enrolled Requested to Verify Total	CARE Households De-enrolled (Due to no response)	CARE Households De-enrolled (Verified as Ineligible)[2]	Total Households De-enrolled[3]	% De-enrolled through Post Enrollment Verification[4]	% of Total CARE Households De-enrolled
January	1,378,527	3,114	0.23%	2,471	127	2,598	83.43%	0.19%
February	1,381,680	2,641	0.19%	1,942	133	2,075	78.57%	0.15%
March	1,383,234	2,345	0.17%	1,632	143	1,775	75.69%	0.13%
April	1,384,327	2,398	0.17%	1,946	81	2,027	84.53%	0.15%
May	1,375,449	2,563	0.19%	2,003	97	2,100	81.94%	0.15%
June	1,372,044	2,521	0.18%	2,010	64	2,074	82.27%	0.15%
July	1,380,831	3,769	0.27%	2,953	102	3,055	81.06%	0.22%
August	1,386,056	5,398	0.39%	3,912	225	4,137	76.64%	0.30%
September	1,383,495	5,083	0.37%	4,242	115	4,357	85.72%	0.31%
October	1,380,857	4,293	0.31%	3,478	118	3,596	83.76%	0.26%
November	1,382,079	4,831	0.35%	3,864	150	4,014	83.09%	0.29%
December	1,382,663	3,938	0.28%	3,040	131	3,171	80.52%	0.23%
YTD Total	**1,382,663**	**42,894**	**3.10%**	**33,493**	**1,486**	**34,979**	**81.55%**	**2.53%**

[1] Includes customers selected randomly or via PG&E's CARE probability model.
[2] Includes customers verified as over income or who requested to be de-enrolled.
[3] Verification results are tied to the month initiated.
[4] Percentage of customers dropped compared to the total participants requested to provide verification in that month.

PY 2019 CARE Annual Report

CARE Table 3B

Post-Enrollment Verification Results (Electric only High Usage)

Month	Total CARE Households Enrolled	Households Requested to Verify [1]	% of CARE Enrolled Requested to Verify Total	CARE Households De-enrolled (Due to no response)	CARE Households De-enrolled (Verified as Ineligible) [2]	Total Households De-enrolled[3]	% De-enrolled through HU Post Enrollment Verification	% of Total CARE Households De-enrolled
January	1,378,527	2,859	0.21%	2,723	37	2,760	96.54%	0.20%
February	1,381,680	3,252	0.24%	3,112	51	3,163	97.26%	0.23%
March	1,383,234	1,334	0.10%	1,299	13	1,312	98.35%	0.09%
April	1,384,327	1,140	0.08%	1,120	9	1,129	99.04%	0.08%
May	1,375,449	209	0.02%	204	1	205	98.09%	0.01%
June	1,372,044	362	0.03%	347	7	354	97.79%	0.03%
July	1,380,831	1,231	0.09%	1,161	23	1,184	96.18%	0.09%
August	1,386,056	3,185	0.23%	2,900	65	2,965	93.09%	0.21%
September	1,383,495	5,628	0.41%	5,205	128	5,333	94.76%	0.39%
October	1,380,857	1,093	0.08%	982	36	1,018	93.14%	0.07%
November	1,382,079	339	0.02%	289	12	301	88.79%	0.02%
December	1,382,663	288	0.02%	247	10	257	89.24%	0.02%
YTD Total	**1,382,663**	**20,920**	**1.51%**	**19,589**	**392**	**19,981**	**95.51%**	**1.45%**

[1] Includes all participants who were selected for high usage verification process.
[2] Includes customers verified as over income, who requested to be de-enrolled, did not reduce usage, or did not agree to be weatherized.
[3] Verification results are tied to the month initiated.

	A	B	C	D	E	F	G
1	**PY 2019 CARE Annual Report**						
2	**CARE Table 4**						
3	**CARE Self-Certification and Self-Recertification Applications[1]**						
4		**Provided [2]**	**Received**	**Approved**	**Denied**	**Pending/Never Completed**	**Duplicates**
5	**Total (Y-T-D)**	11,490,625	446,228	408,945	28,995	8,288	98,559
6	**Percentage[3]**		100%	92%	6%	2%	22%
7							
8	[1] Includes sub-metered customers.						
9	[2] Includes number of applications provided via direct mail campaigns, call centers, bill inserts and other outreach methods. Because there are other means by which customers obtain applications which are not counted, this number is only an approximation.						
10	[3] Percentage of Received. Duplicates are also counted as Approved, so the total will not add up to 100%.						

	A	B	C	D	E	F	G	H	I	J
1	**PY 2019 CARE Annual Report**									
2	**CARE Table 5**									
3	**CARE Enrollment by County**									
4	**County**	**Estimated Eligible Households**			**Total Households Enrolled**			**Penetration Rate**		
5		**Urban**	**Rural [1]**	**Total**	**Urban**	**Rural [1]**	**Total**	**Urban**	**Rural [1]**	**Total**
6	ALAMEDA	117,944	3	117,947	115,360	1	115,361	98%	38%	98%
7	ALPINE	0	187	187	0	8	8	n/a	4%	4%
8	AMADOR	1	4,841	4,842	0	4,346	4,346	0%	90%	90%
9	BUTTE	18,503	12,649	31,151	17,866	11,970	29,836	97%	95%	96%
10	CALAVERAS	41	7,309	7,350	27	5,196	5,223	67%	71%	71%
11	COLUSA	8	2,850	2,858	13	3,461	3,474	162%	121%	122%
12	CONTRA COSTA	79,633	11	79,644	84,755	3	84,758	106%	28%	106%
13	EL DORADO	6,858	6,041	12,898	5,415	5,510	10,925	79%	91%	85%
14	FRESNO	128,361	169	128,530	150,727	114	150,841	117%	67%	117%
15	GLENN	1	5,228	5,229	0	4,709	4,709	0%	90%	90%
16	HUMBOLDT	1	23,474	23,475	0	17,502	17,502	0%	75%	75%
17	KERN	39,953	55,868	95,820	44,390	65,426	109,816	111%	117%	115%
18	KINGS	101	8,219	8,320	121	8,997	9,118	119%	109%	110%
19	LAKE	1	13,159	13,159	1	12,484	12,485	134%	95%	95%
20	LASSEN	0	286	286	0	162	162	n/a	57%	57%
21	MADERA	14,051	6,813	20,863	16,731	5,352	22,083	119%	79%	106%
22	MARIN	18,400	0	18,400	12,281	0	12,281	67%	n/a	67%
23	MARIPOSA	17	2,962	2,980	16	2,191	2,207	91%	74%	74%
24	MENDOCINO	6	12,555	12,561	6	10,281	10,287	101%	82%	82%
25	MERCED	18,641	19,055	37,697	19,598	20,483	40,081	105%	107%	106%
26	MONTEREY	34,203	4,411	38,614	37,091	6,313	43,404	108%	143%	112%
27	NAPA	9,866	0	9,866	10,711	0	10,711	109%	0%	109%
28	NEVADA	11	11,372	11,382	2	9,366	9,368	19%	82%	82%
29	PLACER	20,200	9,291	29,490	11,632	7,383	19,015	58%	79%	64%
30	PLUMAS	82	2,519	2,600	8	1,737	1,745	10%	69%	67%
31	SACRAMENTO	127,290	0	127,290	90,250	0	90,250	71%	n/a	71%
32	SAN BENITO	100	4,192	4,292	59	4,781	4,840	59%	114%	113%
33	SAN BERNARDINO	43	303	346	26	222	248	60%	73%	72%
34	SAN FRANCISCO	66,810	0	66,810	61,335	0	61,335	92%	n/a	92%
35	SAN JOAQUIN	74,066	8,165	82,231	77,474	8,535	86,009	105%	105%	105%
36	SAN LUIS OBISPO	10,603	17,215	27,817	4,686	12,219	16,905	44%	71%	61%
37	SAN MATEO	42,086	0	42,086	32,103	0	32,103	76%	n/a	76%
38	SANTA BARBARA	16,161	1,364	17,525	17,664	724	18,388	109%	53%	105%
39	SANTA CLARA	98,059	3,697	101,756	97,879	2,872	100,751	100%	78%	99%
40	SANTA CRUZ	24,696	6	24,701	19,871	1	19,872	80%	18%	80%
41	SHASTA	11,441	10,518	21,959	9,658	8,597	18,255	84%	82%	83%
42	SIERRA	4	308	312	2	112	114	53%	36%	37%
43	SISKIYOU	0	16	16	0	7	7	n/a	44%	44%
44	SOLANO	36,710	0	36,710	44,137	0	44,137	120%	n/a	120%
45	SONOMA	42,357	2,216	44,573	37,475	2,514	39,989	88%	113%	90%
46	STANISLAUS	29,032	26,325	55,357	23,433	22,049	45,482	81%	84%	82%
47	SUTTER	11,342	0	11,342	13,153	0	13,153	116%	0%	116%
48	TEHAMA	12	12,425	12,437	9	11,544	11,553	74%	93%	93%
49	TRINITY	0	778	778	0	282	282	n/a	36%	36%
50	TULARE	756	8,531	9,287	333	9,431	9,764	44%	111%	105%
51	TUOLUMNE	0	8,873	8,873	0	7,103	7,103	0%	80%	80%
52	YOLO	23,949	1	23,950	20,340	1	20,341	85%	148%	85%
53	YUBA	9,697	117	9,814	11,917	118	12,035	123%	101%	123%
54	**Total**	**1,132,096**	**314,318**	**1,446,414**	**1,088,555**	**294,107**	**1,382,662**	**96%**	**94%**	**96%**
55										
56	[1] "Rural" includes ZIP Codes classified as such by the Goldsmith modification that was developed to identify small									
57	towns and rural areas within large metropolitan counties. ZIP Codes not defined as rural are classified as urban.									

	A	B	C	D	E	F	G	H
1	**PY 2019 CARE Annual Report**							
2	**CARE Table 6**							
3	**CARE Recertification Results**							
4	**Month**	**Total CARE Households**	**Households Requested to Recertify [1]**	**% of Households Total (C/B)**	**Households Recertified [2]**	**Households De-enrolled [3]**	**Recertification Rate % [4] (E/C)**	**% of Total Households De-enrolled (F/B)**
5	**January**	1,378,527	19,458	1.4%	13,043	6,415	67%	0.47%
6	**February**	1,381,680	18,634	1.3%	12,394	6,240	67%	0.45%
7	**March**	1,383,234	20,405	1.5%	14,156	6,249	69%	0.45%
8	**April**	1,384,327	15,400	1.1%	10,564	4,836	69%	0.35%
9	**May**	1,375,449	16,640	1.2%	11,960	4,680	72%	0.34%
10	**June**	1,372,044	15,936	1.2%	10,622	5,314	67%	0.39%
11	**July**	1,380,831	19,103	1.4%	12,616	6,487	66%	0.47%
12	**August**	1,386,056	17,406	1.3%	12,133	5,273	70%	0.38%
13	**September**	1,383,495	17,290	1.2%	12,114	5,176	70%	0.37%
14	**October**	1,380,857	13,948	1.0%	9,940	4,008	71%	0.29%
15	**November**	1,382,079	12,473	0.9%	8,569	3,904	69%	0.28%
16	**December [5]**	1,382,663	13,248	1.0%	13,033	215	98%	0.02%
17	**YTD**	**1,382,663**	**199,941**	**14.46%**	**141,144**	**58,797**	**71%**	**4.25%**
18								
19	[1] Excludes count of customers recertified through the probability model.							
20	[2] Recertification results are tied to the month initiated.							
21	[3] Includes customers who did not respond or who requested to be de-enrolled.							
22	[4] Percentage of customers recertified compared to the total participants requested to recertify in that month.							
23	[5] Removals were put on hold in March 2020 due to the Emergency Consumer Protection Plan related to COVID-19.							

	A	B	C	D	E	F	G	H	I
1	**PY 2019 CARE Annual Report**								
2	**CARE Table 7**								
3	**CARE Capitation Contractors**								
4	**Contractor Name [1]**	**Contractor Type (Check one or more if applicable)**				**Enrollments[2]**			**Total Expenditures**
5		**Private**	**CBO**	**WMDVBE**	**LIHEAP**	**Rural**	**Urban**	**Total**	
6	ACC Senior Services		x			0	13	13	$ 260
7	Amador-Tuolumne Community Action Agency		x		x	49	0	49	$ 980
8	Arriba Juntos		x			0	0	0	$ -
9	Breathe California Central Coast		x			0	0	0	$ -
10	Breathe California of the Bay Area		x			0	1	1	$ 20
11	Catholic Charities Diocese of Fresno		x			13	31	44	$ 880
12	Central California Legal Services, Inc.		x			0	1	1	$ 20
13	Central Coast Energy Services, Inc.		x		x	18	142	160	$ 3,200
14	Cesar A Moncada DBA Moncada Outreach		x			0	15	15	$ 300
15	Chinese Newcomers Service Center		x			0	41	41	$ 820
16	Community Action Marin		x		x	0	4	4	$ 80
17	Community Action Partnership of Madera County		x		x	8	39	47	$ 940
18	Community Resource Project, Inc.		x		x	0	137	137	$ 2,740
19	County of San Joaquin		x		x	4	107	111	$ 2,220
20	Dignity Health		x			0	0	0	$ -
21	Disability Resource Agency for Independent Living		x			0	0	0	$ -
22	Filipino American Development Foundation		x			0	0	0	$ -
23	Good Samaritan Family Resource Center of San Francisco		x			0	5	5	$ 100
24	Heritage Institute for Family Advocacy		x			0	36	36	$ 720
25	Hip Housing Human Investment Project, Inc.		x			0	1	1	$ 20
26	Housing Authority of the City of Fresno		x			0	2	2	$ 40
27	Housing Authority of the County of Kern		x			0	0	0	$ -
28	KidsFirst		x			0	0	0	$ -
29	Kings Community Action Organization, Inc.		x		x	0	0	0	$ -
30	Madera Coalition for Community Justice		x			18	0	18	$ 360
31	Marin Center for Independent Living					0	3	3	$ 60
32	Merced County Community Action Agency		x		x	23	29	52	$ 1,040
33	Oakland Citizens Committee for Urban Renewal		x			0	9	9	$ 180
34	Project Access, Inc		x			0	1	1	$ 20
35	Redwood Community Action Agency		x		x	111	0	111	$ 2,220
36	Resources for Independece Central Valley		x			0	0	0	$ -
37	Rising Sun Energy Center		x			0	0	0	$ -
38	Sacred Heart Community Service		x		x	0	53	53	$ 1,060
39	Self-Help for the Elderly		x			0	32	32	$ 640
40	Southeast Asian Community Center		x			0	0	0	$ -
41	Suscol Intertribal Council		x			0	0	0	$ -
42	Tri-County Independent Living Center		x			0	0	0	$ -
43	UpValley Family Centers		x			0	10	10	$ 200
44	West Valley Community Services		x			0	0	0	$ -
45	Yolo County Housing Authority		x			0	1	1	$ 20
46	Yolo Family Resource Center (Empower Yolo)		x			0	1	1	$ 20
47	**Total Enrollments and Expenditures**					**244**	**714**	**958**	**$ 19,160**
48									
49	[1] All capitation contractors with current contracts are listed regardless of whether they have signed up customers or submitted invoices this year.								
50	[2] Enrollments reflect new enrollments only.								

	A	B	C	D	E	F	G	H
1	**PY 2019 CARE Annual Report**							
2	**CARE Table 8**							
3	**CARE Participants as of Month-End**							
4	**Month**	**Gas and Electric**	**Gas Only**	**Electric Only**	**Total**	**Eligible Households**	**Penetration**	**% Change**
5	**January**	825,366	217,143	336,018	1,378,527	1,446,414	95%	0.2%
6	**February**	826,651	218,125	336,904	1,381,680	1,446,414	96%	0.2%
7	**March**	829,681	217,132	336,421	1,383,234	1,446,414	96%	0.1%
8	**April**	830,605	216,319	337,403	1,384,327	1,446,414	96%	0.1%
9	**May**	824,536	215,190	335,723	1,375,449	1,446,414	95%	-0.6%
10	**June**	824,017	213,958	334,069	1,372,044	1,446,414	95%	-0.2%
11	**July**	830,311	212,012	338,508	1,380,831	1,446,414	95%	0.6%
12	**August**	833,982	212,006	340,068	1,386,056	1,446,414	96%	0.4%
13	**September**	833,047	210,523	339,925	1,383,495	1,446,414	96%	-0.2%
14	**October**	831,598	209,682	339,577	1,380,857	1,446,414	95%	-0.2%
15	**November**	832,582	209,794	339,703	1,382,079	1,446,414	96%	0.1%
16	**December**	832,211	210,015	340,437	1,382,663	1,446,414	96%	0.0%

CARE Table 9
CARE Average Monthly Usage & Bill

Average Monthly Gas / Electric Usage
Residential Non-CARE vs. CARE Customers

Customer	Gas Therms Tier 1	Gas Therms Tier 2	Total
Non-CARE	24.3	10.6	34.9
CARE	21.4	7.0	28.4

Customer	Electric KWh Tier 1	Electric KWh Tier 2 and Above	Total
Non-CARE	243	217	460
CARE	312	181	493

Average Monthly Gas / Electric Bill [2]
Residential Non-CARE vs. CARE Customers [1]
(Dollars per Customer)

Customer	Gas	Electric
Non-CARE	$53.42	$94.66
CARE	$35.59	$64.47

[1] Excludes master-meter usage.
[2] Average Monthly Gas/Electric Bill reflects residential Non-CARE (CARE) 2019 total billed revenues divided by the average number of Non-CARE (CARE) 2019 monthly bills.

	A	B	C	D	E	F
1	**PY 2019 CARE Annual Report**					
2	**CARE Table 10**					
3	**CARE Surcharge & Revenue**					
4						
5	**Electric**					
6	**CARE Surcharge and Revenue Collected by Customer Class**					
7	**Customer Class [1]**	**Average Monthly**		**CARE Surcharge as Percent of Bill**	**Total CARE Surcharge Revenue Collected**	**Percentage of CARE Surcharge Revenue Collected**
8		**CARE Surcharge**	**Monthly Bill**			
9						
10	**Residential**	$4.23	$95.38	4.4%	$184,639,270	29.0%
11	**Commercial**	$41.51	$726.39	5.7%	$271,600,031	42.6%
12	**Agricultural**	$42.92	$1,026.15	4.2%	$46,293,254	7.3%
13	**Large / Industrial**	$9,470.90	$107,691.59	8.8%	$134,383,239	21.1%
14						
15						
16	**Gas**					
17	**CARE Surcharge and Revenue Collected by Customer Class**					
18	**Customer Class [1]**	**Average Monthly**		**CARE Surcharge as Percent of Bill**	**Total CARE Surcharge Revenue Collected**	**Percentage of CARE Surcharge Revenue Collected**
19		**CARE Surcharge**	**Monthly Bill**			
20						
21	**Residential**	$0.90	$53.42	1.7%	$38,674,636	34.8%
22	**Commercial**	$8.74	$294.45	3.0%	$21,460,070	19.3%
23	**Natural Gas Vehicle**	$49.06	$1,336.43	3.7%	$1,132,990	1.0%
24	**Industrial [2]**	$6,756.36	$107,062.34	6.3%	$49,809,135	44.8%
25						
26	[1] Excludes CARE customers.					
27	[2] Industrial includes both G-NT(D), G-NT(T), G-NT(BB), and GNGV4 and is net of volumes qualifying for G-COG.					

	A	B	C	D	E	F
1	**PY 2019 CARE Annual Report**					
2	**CARE Table 11**					
3	**CARE Capitation Applications[1]**					
4	**Entity**	**Total Received**	**Approved[2]**	**Denied**	**Pending/ Never Completed**	**Duplicate**
5	ACC Senior Services	18	13	1	0	4
6	Amador-Tuolumne Community Action Agency	79	49	16	0	14
7	Breathe California Central Coast	8	0	0	0	8
8	Breathe California of the Bay Area	3	1	1	0	1
9	Catholic Charities Diocese of Fresno	135	44	30	0	61
10	Central California Legal Services Inc	5	1	1	0	3
11	Central Coast Energy Services Inc	410	160	69	0	181
12	Cesar A Moncada DBA Moncada Outreach	29	15	1	0	13
13	Chinese Newcomers Service Center	64	41	10	0	13
14	Community Action Marin	9	4	0	0	5
15	Community Action Partnership of Madera County	104	47	41	0	16
16	Community Resource Project Inc	168	137	20	0	11
17	County of San Joaquin	266	111	55	0	100
18	Dignity Health	3	0	0	0	3
19	Disability Resource Agency for Independent Living	1	0	0	0	1
20	Filipino American Development Foundation	1	0	0	0	1
21	Good Samaritan Family Resource Center of San Francisco	6	5	1	0	0
22	Heritage Institute for Family Advocacy	79	36	5	0	38
23	Hip Housing Human Investment Project Inc	2	1	1	0	0
24	Housing Authority of the City of Fresno	4	2	0	0	2
25	Housing Authority of the County of Kern	1	0	0	0	1
26	Madera Coalition for Community Justice	28	18	7	0	3
27	Marin Center for Independent Living	5	3	0	0	2
28	Merced County Community Action Agency	71	52	14	0	5
29	OCCUR	20	9	4	0	7
30	Project Access Inc	2	1	0	0	1
31	Redwood Community Action Agency	175	111	41	0	23
32	Rising Sun Energy Center	1	0	0	0	1
33	Sacred Heart Community Service	101	53	22	0	26
34	Self-Help for the Elderly	121	32	12	0	77
35	UpValley Family Centers	14	10	0	0	4
36	Yolo County Housing Authority	1	1	0	0	0
37	Yolo Family Resource Center (Empower Yolo)	2	1	0	0	1
38	**Total**	**1,936**	**958**	**352**	**0**	**626**
39						
40	[1] Includes sub-metered customers.					
41	[2] Includes new enrollments only.					

	A	B	C	D	E	F	G
1	**PY 2019 CARE Annual Report**						
2	**CARE Table 12**						
3	**CARE Expansion Program**						
4							
5	**Participating Facilities by Month**						
6	**2019**	**Gas**			**Electric**		
7		**CARE Residential Facilities**	**CARE Commercial Facilities**	**Total Gas**	**CARE Residential Facilities**	**CARE Commercial Facilities**	**Total Electric**
8	**January**	3,088	520	3,608	3,836	899	4,735
9	**February**	3,055	516	3,571	3,992	887	4,879
10	**March**	3,057	521	3,578	3,987	891	4,878
11	**April**	3,038	529	3,567	4,124	901	5,025
12	**May**	2,999	530	3,529	4,162	921	5,083
13	**June**	2,673	469	3,142	3,723	830	4,553
14	**July**	2,982	537	3,519	4,167	942	5,109
15	**August**	2,784	469	3,253	3,901	860	4,761
16	**September**	3,150	535	3,685	4,183	948	5,131
17	**October**	3,201	541	3,742	4,244	964	5,208
18	**November**	3,176	538	3,714	4,219	956	5,175
19	**December**	3,220	540	3,760	4,223	970	5,193
20							
21							
22	**Average Monthly Gas / Electric Usage[1]**						
23	**Customer**	**Gas**	**Electric**				
24		**Therms**	**KWh**				
25	**Residential Facilities**	47	475				
26	**Commercial Facilities**	672	8,107				
27							
28							
29	**CARE Expansion Self-Certification and Self-Recertification Applications**						
30		**Received**	**Approved**	**Denied**	**Pending/Never Completed**	**Duplicates**	
31	**Total**	345	277	28	35	5	
32	**Percentage**		80%	8%	10%	1%	
33							
34							
35	[1] Excludes master meter usage.						

PY 2019 CARE Annual Report

CARE Table 13

CARE High Usage Verification Results[5]

Stage 1 - IRS Documentation and ESA Agreement				Stage 2 - ESA Participation [6]			Stage 3 - Usage Monitoring		
Households Requested to Verify	Removed (No Response)	Removed (Verified Ineligible)[1]	Income Verified and Referred to ESA	Failed and Removed[2]	Ineligible[3]	Completed	Removed[4]	Appeals Denied	Appeals Approved
43,100	34,711	1,767	6,622	69	2,470	453	21	1	3

[1] Includes customers who were verified as over income, requested to be removed, or did not agree to participate in ESA Program.

[2] Includes customers who declined to participate in ESA Program, failed to respond to appointment requests, missed multiple appointments or denied access to all rooms.

[3] Includes customers who previously participated in ESA Program, landlord refused, etc. These customers move directly to Stage 3.

[4] Customers removed for exceeding 600% of baseline in any monthly billing cycle, after the 90-day grace period following ESA Participation.

[5] High usage is defined as a customer that exceeds 400% of baseline. Results as of March 31, 2020 (reflecting verification requests mailed in 2018 or 2019).

[6] Does not include 3,630 customers still pending ESA participation.

PY 2019 CARE Annual Report
CARE Table 13A
CARE Customer Usage and ESA Program Treatment

# of CARE customers at or above 90th Percentile of Usage not subject to High Usage PEV[1]	Percent of those CARE customers not served by ESA Program[2]	# of Enrollments led to ESA Program measure Installations	# of Long-Term tenancy CARE customers who have not applied for ESA Program[3]	Energy Usage of Long-Term Tenancy CARE Customers who Accept ESA Program Treatment[4]				Energy Usage of CARE customers who do not accept ESA Program treatment[4]
				Energy Usage before ESA Program treatment	Energy Usage within 3-months of ESA Program treatment	Energy Usage within 6-months of ESA Program treatment	Energy Usage within 12-months of ESA Program treatment	
179,236	40%	106,759	71,621	730	683	657	645	568

1 Those CARE customers who have been on CARE rate at the same meter for at least six years.
2 Includes those customers who have not applied for ESA as well as 856 customers who enrolled in ESA but did not accept any measure installations.
3 PG&E implemented "targeted marketing" to this group in 2018.
4 Reflects average monthly kWh usage

	A	B
1	**PY 2019 CARE Annual Report**	
2	**CARE Table 14**	
3	**Categorical Enrollment**	
4	**Type of Enrollment**	**Number of Customer Enrollments[1]**
5	Bureau of Indian Affairs General Assistance	542
6	CalFresh/Supplemental Nutrition Assistance Program - Food Stamps	64,825
7	CalWORKs/Temporary Assistance for Needy Families (TANF) [2]	13,772
8	Head Start Income Eligible - (Tribal Only)	1,739
9	Healthy Families A&B	75,037
10	Low-income Home Energy Assistance Program (LIHEAP)	31,812
11	Medicaid/Medi-Cal	95,438
12	National School Lunch Program (NSLP) - Free Lunch	31,475
13	Supplemental Security Income (SSI)	44,537
14	Tribal TANF [2]	13,772
15	Women, Infants, and Children Program (WIC)	28,559
16		
17	[1] Number of customers enrolled reflects categorical programs selected by customer. Customers may select more than one eligible program for a single account.	
18	[2] CalWORKS and Tribal TANF are combined categorical programs with no distinction between the two programs.	

8. Appendix C: PG&E's Annotated Bibliography for a Household Hardship Reduction Indicator (HHRI)

Annotated Bibliography for a Household Hardship Reduction Indicator (HHRI)

Picture from PG&E's website

Prepared for:

PG&E Low-Income Leadership Team

Prepared by:

GROUNDED
RESEARCH AND CONSULTING

Date:

July 29, 2019

Introduction

Attachment A of the CPUC's *Proposed Decision Issuing Guidance to Investor-Owned Utilities for California Alternative Rates for Energy/Energy Savings Assistance Program Applications for 2021-2026* provides guidance to the utilities, including the requirement to develop a Household Hardship Reduction Indicator (HHRI). PG&E's low-income leadership team contracted with Grounded Research and Consulting, LLC to help provide information on a potential HHRI metric. This document is a review of relevant literature that can help support evidence-based decisions about a future HHRI metric.

HHRI Guidance

The CPUC is requiring the 2021-2026 Energy Savings Assistance (ESA) programs to perform weatherization services if a significant need for these services exist when considering both cost-effectiveness and "the policy of reducing hardships facing low income households." The CPUC is requiring the utilities to provide a "Depth of Energy Savings Goal" that includes an HHRI.[1] The HHRI would support encouraging the installation of both resource measures and non-resource measures that reflect net benefit or hardship reduction. They also note that IOUs may sub-divide the goals by housing type or segment (e.g., disadvantaged communities, tribal communities, hard-to-reach). Below is the language about from the decision that provided guidance on the HHRI.

> "*Household hardship reduction indicator: Propose a per household metric that accounts for both Resource and Non-Resource measures installed in that it reflects overall net benefit or hardship reduction to the customer, for example average annual net energy savings and average annual bill savings. Provide as applicable:*
>
> *a. the methodology that identified the metric's baseline quality for the household metric*
> *b. the potential for customer household hardship reduction (estimated opportunity improvement over baseline per this proposed metric)."*

We note that neither the CPUC guidance document nor the literature we reviewed clearly defines hardship. The literature uses different terms such as "Energy Insecurity" or "Fuel Poverty" as a catch phrase for difficulties that a reasonable person would agree can create "hardship" for a household. The literature did not always clearly bound the limits of program effects or blurred the hardship categories.

This Document

We focused our review on documents that touch on metrics related to energy and "health, safety and comfort." Through our review, we looked for information that would support metrics that could potentially draw on survey data, utility data, or other secondary information.

While we reviewed many documents, this bibliography summarizes only the ones that had information that we thought would be valuable to the low-income leadership team. Within these documents, we summarized information that was pertinent to understanding information that could provide insights to a future HHRI metric.[2]

[1] The other required areas were participation and portfolio energy savings goals as well as a PA discussion about how worthwhile it would be to include additional metrics of energy burden, public health indicators or climate change.
[2] While the reports listed in the bibliography often include much more extensive information on other topics (e.g., impacts of programs, customer satisfaction), that information is not included in this document.

Each document listed in the bibliography provides:

- General information about the document (including the reference)
- Metrics and values (when available) or other relevant findings
- Measurement methods
- Informal working notes from the Grounded Research team that will support an evidence-based assessment of the literature

This document is one part of the deliverable to PG&E. Grounded Research will also provide a memo (draft by August 15) with HHRI options for consideration by PG&E.

Annotated HHRI Bibliography

1. **Apprise Institute for Study and Evaluation. 2017.** *FirstEnergy Universal Service Programs. Final Evaluation***.** Report that assessed multiple impacts from a suite of five low-income programs within four specific utilities under the FirstEnergy Companies umbrella. These five programs provide: 1) reduced payments and arrearage forgiveness, 2) energy efficiency and energy education, 3) outreach and referral, 4) emergency assistance with bill payment, and 5) field personnel who recognize and report customers who may be in distress. These are programs more like CARE than ESA. Once included in the program to reduce payments and arrearages (a program like CARE), customers are referred to the energy efficiency program (a program like ESA). About 13% of CARE type customers participated in the utility ESA type program.

   — **Metric information or relevant findings:** Includes information showing how a utility brings out information related to hardship, although the study authors do not specifically call out "hardship." Three metrics that they report on are shown below.

   - **Difficulty paying bill and other economic questions (self-reported):** Data showed that, once in the program, 13% indicated it was very difficult to pay their bill (down from 56% pre-program). Other self-reported questions asked about the need to and frequency of delaying or skipping payment of other relevant bills (e.g., food, mortgage, rent, car payment, etc.) both pre- and post-participation. The report showed reduction from 14% to 3% of households always or frequently delayed/skipped mortgage or rent payments.

     (These responses are for a program that includes reduced payments and arrearage forgiveness within one utility only—so more similar to CARE than ESA. The study does not call out participant specific results for the weatherization and education program.)

   - **Reduction in "collection actions" taken (utility data):** The study included a table with the percent of participating customers with specific payment "collection actions" taken by the utility. The table showed binned number of actions (e.g., no actions, 9-12 actions, etc.) across three years with a division between those with and without electric heat. There was little movement seen across the years in this table. Only the group with >16 actions appears to have come down over the timeframe, i.e., 21-22% in 2013, down to 15-17% in 2015). See Attachment C.

     (These values are for customers directly involved in the reduced payment and arrearages program but includes customers also energy efficiency program and indicate that it may be difficult to see changes over time when looking across a broad swath of low-income customers.)

   - **Reduction in service terminations (utility data):** The study also showed a table of mean number of collection actions for participants within all five programs, including disconnections. Again, there was little change over time in these values (e.g., 0.1 disconnects per HH seen in all three years). See Attachment C.

   — **Measurement methods:** The study used both utility data (collections and disconnections) and self-reported data (a survey of participants). The measurement for each is briefly described above so not repeated here. For the survey, they include pre- and post-program measurements.

   — **GR notes:** While this study focuses on a CARE-type program (more than an ESA program), this study provides an example survey question that allowed the utility to gauge self-reported perception of paying bills. This also shows the use of collections data and disconnects (and how it could be presented/binned), but notably, the FirstEnergy programs saw little movement in these latter metrics. The use of arrearage and collections data may also reflect CARE more than ESA.

2. **Evergreen Economics. 2016.** *Needs Assessment for the Energy Savings Assistance and the California Alternate Rates for Energy Programs. Volume 1 of 2. Final Report.* **Calmac ID: SCE0396.01. (Referred to as 2016 LINA Study)**
   Report that examined the extent to which CARE and ESA address low-income customer needs. It explored the challenges that low-income households face because of their energy usage and bills. This study looked at four metrics: energy burden, modified energy burden, energy insecurity and material hardship. The definitions and key inputs for each metric are described in Attachment C of this memo.

   - **Metric information or relevant findings:** Study stated that the four metrics together are better than one metric and provided the following metrics (2016 data). Note that for many of the metrics, there were not significant differences between those on CARE and those low-income customers not on CARE.
     - **Energy burden and modified energy burden:** Energy burden is calculated from a household energy costs (from the IOU) and the household income (from survey responses). The study estimated a modified energy burden by recomputing the value to adjust for selected non-cash resources received by a household (from survey data). These non-cash resources were items such as housing assistance, food stamps, or medical assistance from Medi-Cal or Medicaid. On average, energy bills across all four utilities account for 5.6% of self-reported income, down from 8.0% in 2013. When other non-cash assistance is included, the *modified energy burden* is 4.1%. This is also presented by income group and CARE v non-CARE. PG&E's customers had the highest energy burden of all four IOUs at 6.1% for 2016 program participants. (Figure 4 in Volume 2)
     - **Energy insecurity** (i.e., self-reported struggle to pay energy bill): Energy insecurity is a composite value based on three areas. Struggling with energy bills is one of those three areas. HH disposition and motivation to save, and equipment related inability to keep home temperature comfortable are the other two. Study authors apply points to each of these areas given responses from the surveyed respondent and sums these points to assign a value from high to none for energy insecurity. Approximately 1/4 face high energy insecurity and another 1/4 face moderate insecurity (p 64) based on the study index. Based on one of the questions that feeds into this index, about 1/3 of low-income HH struggle with energy bills either often or constantly. For PG&E, energy insecurity values are slightly lower than across the state (17% with high energy insecurity and another 18% with moderate insecurity). (Figure 5 in Volume 2)
     - **Material hardship:** Material hardship is a composite value based on two areas (federal poverty level ratio and frequency of HH inability to pay for basic living expenses such as food and housing). Study authors apply points to each of these areas given responses from the surveyed respondent and sums these points to assign a value from high to none for material insecurity. Among low-income customers, 21% saw a high level of material hardship and another 48-49% saw a moderate level of material hardship. (p 69 Figure 13). PG&E's customers had similar levels of material hardship (26% high and 42% moderate). (Figure 6 in Volume 2)
     - **Greatest need:** Related to those with the "greatest need", households with the following characteristics were found to have more hardships: very low-income households, households in the desert or mountain regions, households with disabilities, households with higher energy usage or renters, and households with seniors.

   - **Measurement method:** The metrics draw on survey data and utility billing data. The study surveyed 905 HHs (in English and Spanish languages). The study provided suggestions for revising the metrics (p 156). Delinquent in payments/Receive disconnect notices were mentioned but not used. This study supports the use of multiple metrics (rather than just one), indicating that only energy burden is well-established and that the other metrics are still evolving.

- **GR notes:** Energy burden and modified energy burden could be valuable HHRI (for example, percentages of households with an energy burden or modified energy burden less than X%). As such, this study provides a good reference for energy burden. However, we note that the value changed significantly between years. This finding seems to indicate that the programs may not be the only thing affecting this metric (i.e., the change may be largely due to other factors). It will also be important to consider non-cash assistance – e.g., should PG&E consider *modified* energy burden over energy burden.

3. **George S. and E. Bell, A. Savage, and B. Messer. 2018.** *California Opt-In Statewide Time-of-Use Pricing Pilot*. **Final Report. Nexant and Research Into Action.**
Impact assessment of the residential opt-in time-of-use (TOU) pricing pilots implemented by PG&E, SCE, and SDG&E. The study authors assessed load and bill impacts for CARE/FERA[3] and non-CARE/FERA in three climate zones (hot, moderate, and cool) and by IOU. The study also included surveys to assess if TOU rates significantly increased the percent of customers that reported hardship conditions. An earlier annual report provides more detail on hardship (see Peters et. al 2017 below).

   - **Metric information or relevant findings**:
     - **Economic and health hardship metrics**, see Peters et. all 2017 (the companion document) for the metrics and baselines used. Key finding was that economic and health hardship were not materially increased by TOU rates for most segments of interest in hot climate zones (although there were variations by IOU and rates).

   - **Measurement method:** The study created and used self-reported indices: an economic index and a health hardship index. The indices were not detailed in this study but was included in draft and interim reports. (See Peters et al. 2017 below for details.) These indices were based on survey data.

   - **GR notes:** See Peter et. al 2017. Given that the study found no increase in economic or health hardships for TOU customers most likely to see these hardships (i.e., those in hot climates), baseline information and future measurements could be relevant even if CARE/FERA customers move to TOU. (*The GR team would like to better understand how this study informed the decisions not to move CARE/FERA customers on to TOU rates.*)

4. **Hawkins, B. and B. Tonn, E. Rose, G, Clendenning, L., Abraham. 2016.** *Massachusetts Special and Cross-Cutting Research Area: Low-Income Single-Family Health- and Safety-Related Non-Energy Impacts (NEIs) Study."* **Prepared by: Three3, Inc and NMR Group. Prepared for: Massachusetts Program Administrators.**
Report that took ORNL's national findings (from 2014) and updated them for Massachusetts using the national data triangulated with other data points and expert opinion. This report focused on 8 (of 12) national NEIs. These were all participant NEIs, although they report participant and societal values used to quantify the value (in dollars). The four most relevant to hardship are listed below. We present only participant benefits.

   - **Metric information or relevant findings:**
     - **Reduced asthma (lower medical costs)**
     - **Reduced cold-related thermal stress (lower medical costs and fewer deaths)**
     - **Reduced heat-related thermal stress (lower medical costs and fewer deaths)**
     - **Reduced missed days at work (reduction in lost income)**

[3] California Alternate Rates for Energy, CARE and Family Electric Rate Assistance, FERA receive significant electricity price subsidies. Participation in CARE/FERA is tied to income and household size.

- **Others:** Others included reduced carbon monoxide poisoning and reduced home fires, but these are very rare. They do save lives, so they were quantified and used in MA.

— **Measurement method:** The report lists values that could be applied if the metric is to be monetized. Note that we include these values here, under "measurement method," rather than above since these are not baseline values. Again, they could be used to monetize the HHRI and/or they could help to quantify it in advance (ex ante) since often these values are applied to the total number of participants. We provide the $ value from the report below. Note that some of these are climate or economy related, which may be very different between MA and CA.

- Reduced asthma (lower medical costs): $9.99 per household (without avoided deaths)
- Reduced cold-related thermal stress (lower medical costs and fewer deaths): $4.67 per household (without avoided deaths)
- Reduced heat-related thermal stress (lower medical costs and fewer deaths): $8.28 per household (without avoided deaths)
- Reduced missed days at work (reduction in lost income): $149.45 per household (without avoided deaths)

— **GR notes:** This report provides monetized values that were applied on a per weatherized unit basis. Some of the cold- and heat-related impacts might not be applicable for the more mild climates in California. Note that the ORNL and the national WAP study is a better source of data for the California utilities.

5. **Hernandez, D. 2016.** *Understanding 'energy insecurity and why it matters to health.* **Soc Sci Med, PMC.**
Author manuscript of an article from HHS Public Access that discusses energy insecurity.

— **Metric information or relevant findings:**

- **Energy insecurity:** [Energy insecurity is] defined as an inability to adequately meet basic household energy needs, and is usually defined as "a multi-dimensional construct that describes the interplay between physical conditions of housing, household energy expenditures and energy-related coping strategies." That is, this measure is usually an index or a series of indicators that speak to the households conditions.
  - **The primary dimensions of energy insecurity are economic, physical and behavioral.** This paper describes each of these three dimensions.
  - "Combined, the physical and economic challenges associated with energy insecurity prompt coping strategies in the form of behavioral responses to energy inefficiencies that sacrifice comfort and potentially safety in response to energy costs (e.g., space heaters…)…paradoxically, these practices may lead to higher utility bills."

— **Measurement method:** Explored (a) the primary dimensions of energy insecurity, (b) how energy insecurity relates to material hardship, and (c) the health and social implications of energy insecurity through semi-structured home-based interviews with a convenience sample of 72 low-income households in Boston.

— **GR notes:** This paper provides depth around three dimensions, but notably, this study is from the Northeast.

6. **LIHEAP. 2003.** *Measuring the Outcomes of Low-Income Energy Assistance Programs Through A Home Energy Insecurity Scale.*
Older LIHEAP publication

- **Metric information or relevant findings:**
  - **Energy Insecurity Scale**
    - Although this is an older document, it does attempt to categorize and define five groups within the household level home energy insecurity scale for Home Energy Assistance Programs: Thriving, Capable, Stable, Vulnerable, and In-crisis.

- **Measurement:** This method does employ a survey and lists the questions that they used to determine the various levels.

- **GR notes:** This may be useful for determining a threshold for the indicator (if one is needed) and/or determining households with the greatest need.

7. **LIHEAP. 2019.** *New LIHEAP Performance Measures – Performance Measure History.* **https://liheapch.acf.hhs.gov/pm/needtoknow.htm (viewed 7/23/19)**
Information from LIHEAP website.

   - **Metric information or relevant findings:**
     - **Home Energy Insecurity Scale:** Measurement that has been developed over time by LIHEAP. They have narrowed in on three categories (some with multiple components).
       - **Home energy burden is reduced:** Average annual primary energy costs; average annual income; average annual LIHEAP benefit. Looks at benefit targeting index (demonstrating whether the state is giving higher benefits to higher burden households) and burden reduction targeting index (showing how burden reduction for higher burden homes compares to burden reduction for the average recipient).
       - **Home energy crisis are prevented** (service loss preventions) Number of HH where LIHEAP prevented a home energy crisis. Shows the number of clients who would have lost service if not for the interventions.
       - **Home energy services are restored** (service restoration): Number of HH where LIHEAP benefits restored home energy. How many clients had service restored by intervention.

   - **Measurement method:** This is the website that provides the data definitions and guidance for measurement. Some parts can only be accessed but state grantees.

   - **GR notes:** Demonstrates the history and the thought process and data collection for LIHEAP, which has dealt with similar measurement issues.

8. **Messer B. 2019.** *LINA Preliminary Results and Table Formats* **(early insights on upcoming LINA 2019 study).**
Memo documenting early results from a survey of CARE and ESA participants. These numbers are subject to change since the document has not been released.

   - **Metric information or relevant findings:**
     - **For ESA:** Survey questions related to hardship are shown below. These are self-reported with a comparison group as a reference. Respondents were asked how often they experienced this issue on a scale from 0 to 5 where 5 means most or all of the time. Those who reported issues were then asked how often the issue caused harm to any household members (available in Table 10 of the memo.) There were statistically significant changes in the effects on health and this data is available.

- **Uncomfortably cool temperatures on the cold days or nights of the year:** ESA participants before and after participation (3.1 down to 2.3), compared to non-participants (2.8).
    - Among those who reported an issue at least a few times were then asked about harm caused by this issue. Frequency of health effects from this in the past year before 2.5, after 2.1; non-part 2.0.
- **Uncomfortably warm temperatures on the hot days or nights of the year:** ESA participants before and after participation (3.3 down to 2.2), compared to non-participants (3.1).
    - Among those who reported an issue at least a few times were then asked about harm caused by this issue. Frequency of health effects from this in the past year before 2.6, after 2.1; non-part 2.0.
- **Drafts coming from outside:** ESA participants before and after participation (3.0 down to 2.0), compared to non-participants (2.4).
- **Mold, mildew, fungus, or moisture:** ESA participants before and after participation (2.3 down to 1.9), compared to non-participants (1.9).
- **Pests such as rodents or insects:** ESA participants before and after participation (3.1 down to 2.3), compared to non-participants (2.3).

- **For CARE:** Survey questions related to hardship are shown below. Note that this is self-reported with no comparison group. Respondents were asked to agree on a scale from 0 to 10 where 10 means completely agree.
    - **Helped improve your household's overall financial situation:** Mean 8.4
    - **Helped you pay your household's energy bills on time:** Mean 8.0
    - **Reduced the amount you worry about being able to pay your energy bills:** Mean 8.0
    - **Helped your household stay out of deeper debt:** Mean 7.7
    - **Helped you afford other basic needs:** Mean 8.1

— **Measurement method:** Self-reported survey data (with questions and scales shown above). There appears to be between 420-450 respondents. Full methods forthcoming with full report.

— **GR notes:** The ESA questions (and specifically the measurement of temperature on comfort) are common measurements. The CARE questions are frames in terms of the impact on the program, and thus may not be the right way to measure household hardship.

9. NMR Group Inc. 2011. *Massachusetts Special and Cross-Sector Studies Area, Residential and Low-Income Non-Energy Impacts (NEI) Evaluation.* **August 15, 2011.**
Older report with a review of hardship prior to 2011. Key findings and the related (older) documents are excerpted below. Hardship appears to be discussed as a societal NEI (rather than a participant NEI) in some areas of the report.

— **Metric information or relevant findings:** This is excerpted directly from the NMR 2011 study.

- "Low-income program studies have often focused on 'hardship' related benefits. These benefits are often measured not monetarily, but via other metrics such as family development models and the Home Energy Insecurity Scale[4] developed for the federal LIHEAP office. These include NEIs on family stability, mobility, and reduced dependence on social assistance. A recent national study on the

[4] We also explored the LIHEAP and other Home Energy Insecurity Scales, which we discuss under LIHEAP and Hernandez.

energy cost burden to low-income households found that the average energy burden of low-income households is about twice that of the national average: 13.5% for LIHEAP eligible households versus 7% for all US households (Snyder and Baker, 2010). One method of quantifying the reduced societal disparity for the low-income population is to value this NEI as equal to the energy cost savings benefit of the program.

- **Multiple metrics** (in Khawaja 2001) "An evaluation of the Indiana REACH program, which provided energy assistance through LIHEAP and counseling, rather than implementing energy efficiency measures, found the program was successful in alleviating hardships and resulted in improvements in measures of social well-being. For example, program participants experienced the following improvements: an 18% **reduction in school absences**; 52% **reduction in family moves**; 9% **increase in federal and state benefits per month**; variable **impacts on family debt**; increase of 22% in **total income**; increase of 28% in **total employment income**; reduction of 12.5% in **annual energy consumption expenditures**; and a reduction of 28% in **energy burden** (Khawaja, 2001)."
- **Average income and employment score** (in Drakos et al. 2008) **"**Another program that achieved reduced hardship and improved equity for low-income participants is the Oregon REACH program (Drakos et al., 2008). The Oregon REACH program employed a variety of program elements to achieve its goal of reducing the energy vulnerability of low-income families, including energy education, bill-payment assistance, family assessment, budget counseling, referral to other community services, solar hot water heating, and weatherization. **Average income** of program participants increased 4%, while **employment scores, as measured by the family development tool**, increased 6% over the course of the program. Many participants received do-it-yourself energy conservation kits, though only 10% of participants in the Oregon REACH program received weatherization. While quantifications of improvements in social indicators were provided in these reports, quantifications of the societal NEI of improved equity were not computed.

— **GR notes:** The authors state that hardship metrics tend to be items that are looked at by non-monetary indicators (even though some items are able to be monetized). This and several other studies conclude that there is a need for hardship research. We also explored the Home Energy Insecurity Scale used by LIHEAP.

10. **Oregon Department of Energy. 2018***. Ten-Year Plan: Reducing the Energy Burden in Oregon Affordable Housing.*
This is a 10-year plan to help Oregon prioritize energy efficiency in affordable housing, which was mandated by an executive order in 2017.

— **Metric information or relevant findings:**

- **Energy burden:** This is defined as the percent of household income spent on energy bills. This document cites a study indicating that commonly, an affordable energy burden must be no higher than six percent of the household's income. This is based off study in New York, *Home Affordability in New York: The Affordability Gap (2008-2010).*
- **Energy affordability:** This is defined as the difference between a household's actual energy costs and an "affordable" energy burden level equal to six percent of the household's income. This is the dollar amount needed to bring energy burdened households to an "affordable" level.
- **Greatest need index:** This study includes a "High Priority Area Index" to more easily identify the counties with the greatest energy burden. The index included the energy burden as well as affordability hardship due to low household income, measured as the percent of low-income households (economic driver); poor home energy efficiency due to older home vintage, measured as

the percent of units build prior to 1990 (physical driver); and housing inequity issues due to ethnicity/race, measured by the percent of people of color (systemic driver).

- **GR notes:** This document should be reviewed by the PG&E team considering how to respond to the CPUC's request for prioritizing the "greatest need." It is less valuable to the development of an HHRI, although it does show that energy burden is the key metric being considered in Oregon. It also demonstrates one possible relationship between energy burden (a possible HHRI metric) and "greatest need." See also Evergreen Economics 2016 and Stats NZ 2017 regarding the limitations of energy burden.

11. **Tonn, B, Rose, Erin, Hawkins, Beth, and Conlon Brian.** *Oak Ridge National Laboratories. 2014. Health and Household-Related Benefits Attributable to the Weatherization Assistance Programs.*
Report describes and monetizes twelve health and household related benefits attributable to the weatherization of low-income homes by the U.S. Department of Energy's (DOE) Weatherization Assistance Program (WAP). WAP seeks to obtain the same non-energy benefits as PG&E's ESA program, including improving health and safety among all low-income households, but especially the vulnerable such as the "elderly, persons with disabilities, families with children, high residential energy users, and households with high energy burden".

- **Metric information or relevant findings:** There are multiple metrics, and three tiers of estimates, depending on the analytical method.
  - **Multiple metrics: Asthma, Thermal Stress-Cold, Thermal Stress-Heat, Food Assistance Reduction, Reductions in Missed Days at Work.** Also includes CO poisoning, home fires and others.
  - Presents data in three tiers depending on the rigor of the data.
    - "Tier 1 estimates are based on **observed monetizable outcomes** attributable to weatherization (i.e., observed through the national occupant survey, pre- and post- weatherization with a control group) and highly reliable cost data.
    - Tier 2 and 3 estimates all have **sound methodologies** underlying them **but may lack direct observations** of improved health or well-being (e.g., based on counts of carbon monoxide monitors installed rather than on survey reports of fewer CO poisoning post-weatherization) and/or require relatively more assumptions.
  - The study found that self-reported savings were "just over $500 in out-of-pocket medical expenses post-weatherization and an additional $2,800 in additional health benefits from weatherization."
- **Measurement method:** Study authors based their Tier 1 results on 1,457 surveys that covered both treatment and comparison groups. See above for Tier 2 and 3. Monetized values are in Attachment F.
  - See Tier 1 v. Tier 2-3 above. Also, the Present Value (PV) benefits are presented with and without including the value of lives saved. To help gauge the magnitude of these benefits, the average weatherization cost per unit (includes energy and non-energy measures; excludes administrative costs) in PY 2008 for a site-built single-family home was approximately $4000. The PV per unit of health-related benefits is estimated to be $14,148."
  - The values are all presented as societal benefits with survey data as the underlying data used within the monetization effort. We note that these benefits drop to $439 when the value of life is excluded. (See Attachment F.)
  - This study also presents a way to look at the level of effect and uncertainty of effects. (See attachment.)
    - **GR notes:** The study provides evidence of various health and safety benefits that weatherization can provide.[5] The study provides survey or regression specific values for each of these benefits prior to

[5] WAP includes air sealing, insulation (e.g., wall and attic), furnace repair and replacement, refrigerator replacement, and ventilation. The program could not spend more than $3,500 per home and could use ~15% to address health and safety issues.

monetization, so are available if needed. The metrics are one also review in other studies. This is a national study, not California-specific. Other states (MA) have used this as one input to their state-specific valuation of the benefit.

12. **Wilson, Jonathan, Jacob, David, Reddy, Amanda, Tohn, Ellen, Cohen, Jonathan, Jacobsohn, Ely. Oak Ridge National Laboratories. 2016.** *Home Rx: The Health Benefits of Home Performance***.**
Report is a literature review of 40 studies attempting to answer two questions: "what are the occupant health and indoor environmental outcomes resulting from energy efficiency or home performance upgrades, and how indoor environmental conditions can affect health." The study includes a detailed appendix with results of all these studies, but because each study varies in the program studied, methods used, and results.

— **Metric information or relevant findings:** The review found evidence of health impacts from programs such as ESA based on the weatherization measures as well as the newer measures PG&E is considering such as room air filters.

- **Multiple health related metrics (shown in bold)**.

  - "Base energy efficiency work, such as work done under DOE's Weatherization Assistance Program, can also create healthier living environments. Health-related outcomes include **improved general health,** reductions in some **asthma** symptoms**,** fewer cases of **hypertension and upper respiratory risks,** and some improvements in **indoor air quality contaminants**. One New Zealand study showed significant **healthcare savings** when uninsulated homes received energy upgrades. (See also ORNL 2014 and New Zealand 2017 in our bibliography.)
  - Enhanced energy efficiency upgrades have been shown to reduce indoor air contaminants linked to chronic illnesses, control environmental contaminants (dust mites, mold/moisture) that can trigger respiratory symptoms, and improve symptoms of asthma and other respiratory health conditions. The studies also found **reductions in other indoor air pollutants** and reported **improvements in blood pressure and fatigue**. One small study of low-income clients also showed a red**uction in healthcare costs** among U.S. residents. The enhanced practices most closely match common practices in the home performance industry
  - Several stand-alone home services/upgrades have been shown to **improve occupant health** and could be incorporated into home performance work specifications. These include: in-room HEPA (high-efficiency particulate air) air cleaners, replacement of gas stoves with electric stoves, and upgrades from older wood stoves to cleaner burning models. These upgrades help to reduce **respiratory risks** by reducing **air contaminants** (e.g., nitrogen dioxide; fine particulate matter)."

— **GR notes:** The study provides evidence of various health benefits that ESA could cause but does not provide specific values that are helpful for an HHRI.

13. **Peters J, Messer B, Folks J, Hathaway Z, and Focella E. 2017.** *California Statewide Opt-In Time-of-Use Pricing Pilot: 2017 Customer Survey Results. Final Second Interim Evaluation.*
Report describing in detail a survey that collected self-reported information on hardship, specifically "whether customers experienced economic and/or health hardship due to the TOU rates, or had problems paying their bills." There were two waves of surveys and this report describes the second wave. Foundational work for companion piece George, S, et. al 2018. This report also covers issues such as satisfaction with utility, customer understanding of bills and TOU rates, and types of actions taken.

— **Metric information or relevant findings.** Estimated two hardships – economic hardship and health hardship through indices of each.

- **Economic index:** The study included five questions on economic hardship and created an index from these questions. Questions asked whether respondents worry about affording bills, have difficulty paying bills, and use non-income methods to pay bills. The study provided an index value for all 2017

respondents, as well as by IOU and CARE/FERA customers. For PG&E, the CARE/FERA economic hardship index was 4.02 (out of 10, where larger values indicate higher hardship).

- **Health index:** The study included five questions on economic hardship and created an index from these questions. The questions asked customers with a disabled household member, and either air-conditioning (in the summer) or space-heating (in the winter), whether they sought medical attention due to excessive temperatures. The study provided an index value for all 2017 respondents, as well as by IOU and CARE/FERA customers. For PG&E, the CARE/FERA health hardship index was 2.91 (out of 10, where larger values indicate higher hardship).
- Not surprisingly, CARE/FERA customers reported greater hardship and concern for or difficulty in paying bills compared to non-CARE/FERA customers. The study authors performed additional analysis to assess whether the TOU rates caused unreasonable economic or health hardships for CARE/FERA customers that we do not describe.

— **Measurement method:** A large number of customers (39,125) provided complete or partially complete responses to the 57-question survey (an 82% response rate and with about 95% of customers who completed the first wave survey). The survey covered the general population (with an oversample for CARE/FERA) and customers were contacted via email, letter and/or phone in five languages. Details of the indices can be found on p 12 -26 of this report, but we summarize next. (See also Attachment E. Economic and Health Hardship Indicators.)

- The method used a control group to make comparisons.

— **GR notes:** If the program creates a metric that relies on survey data, this report could help inform the metric and baseline. The method deployed to create the two indices described above were rigorously tested through a 2-year effort. The study could provide a baseline value for the exact same set of questions. The authors indicate that "the economic index appears effective for measuring economic effects of TOU rates on customers" and that "the health metric is less robust but appears to be useful for identifying vulnerable customers." In addition, as with any index or metric, the utilities would need to consider how the program would affect the metric. PG&E should also confirm that there was no bias in the selection process for the TOU pilot that would make this population different from a general population—or more specifically, make the CARE/FERA results different than the CARE and ESA populations. See also LINA 2019 memo.

14. **Skumatz. L and D. D'Souza, M Santulli, M. Podolefsky, J. Minor-Baetens. 2019.** *Non-Energy Benefits and Non-Energy Impact (NEB/NEI) Study for the California Energy Savings Assistance (ESA) Program.* **(Volumes 1 and 2) DRAFT NOT FOR PUBLIC DISTRIBUTION.**
Recent draft report (not public yet) on the choices made to update the California 2001 Cost Effectiveness tool (Low Income Program Public Purpose Test, LIPPT). This document describes the multiple NEBs used in the 2001 LIPPT, potential new NEBs to add to an updated test, and lists final choices for NEBs to include in the new test (called NEB 2.0). Volume 2 provides the details for each metric, and assesses five criteria, including two that we call out because of their applicability to a future HHRI metrics: causality (i.e., whether ESA has an effect) and measurability (i.e., whether it has been, and can be measured). Below we focus only on the participant NEBs (not utility or societal) since the effort is to find a household-specific metric.

— **Metrics discussed**[6] (no baselines, but includes $ value to quantify for a cost-effectiveness test, discussed in "Measurement method" section):

[6] Note that in Volume 1, two other metrics are mis-labeled as hardship metrics: ability to control energy bills, and ability to contribute to environmental efforts. In Volume 2, these fall into different categories (i.e., categories much more aligned with their meaning).

- **Disconnects (shutoffs/reconnects):** There is a participant benefit to avoiding disconnections (and a resulting hardship from not having energy at certain times). This NEB is not included (set to zero) in the current model.
  - **Reductions in number of disconnects:** An HHRI would most likely come from a reduction in the number of disconnects – not the value of the disconnect. The report indicates that this is measurable and that the ESA program will lead to fewer bill payment issues (and thus a reduction in disconnects).
- **Customer arrearage reductions:** The program directly leads to a reduction in financial burdens on the households, expressed by the reduction in arrearages as a dollar value. This NEB is not included (set to zero) in the current model, although it is unclear why since the values are provided.
- **Hardship (economic hardship):** This is defined as the reduction in financial pressure, in terms of less bill payment hassle and less stress from the pressure of bills, due to lower energy bills. This measure may also touch on quality of life, but the study was unable to find a strong value. As such, this NEB is not included (set to zero) in the current model.
- **Reduced need to move and cost of moving:** Financial savings resulting from a reduced need to move and moving costs. Note that there are several studies that indicate that this NEB overlaps with bill savings. Studies also mention that this NEB is related to much more than just energy costs. This NEB is not included (set to zero) in the current model.
- **Others** that speak to hardship or health/safety/comfort: fewer missed days at work, reductions in asthma, or thermal comfort, fewer fires.

— **Measurement method:** The report lists values from several studies that could be applied if the metric is to be monetized. Note that we include these values here, under "measurement method," rather than above since these are not baseline values. Again, they could be used to monetize the HHRI and/or they could help to quantify it in advance (ex ante) since often these values are applied to the total number of participants. We provide the $ value from the report below.

- **Disconnects (shutoffs/reconnects:** $0.02 -$7.00/hh/year (based on an NMR 2011 study)
- **Customer arrearage reductions:** To date, this has been limited to a one-year estimate to be conservative, but it is often spread over the life of the measure. Values are typically close to $30/hh/yr but range from $0-$469.
- **Hardship:** Defined as the reduction in financial pressure related to energy bills, the study states that this is rarely quantified, and the reliability of the data is difficult. Values range from $2-$65 (typically close to $60).
- **Reduced need to move and cost of moving:** This is quantified by prevented moves * cost per move (estimated in one 2007 as $700 per move); however, there are often other reasons for moves so program would need to demonstrate causality. The cited works describe how cost per move was determined. (Elsewhere this study refers to values between $0.50 and $80 but with no back up data.)

— **GR notes:** Our review of this study raises the issue about whether a future HHRI metric is a stand-alone metric (where the utilities can show a change in the metric itself) or whether the metric needs to be able to be monetized for inclusion in a cost-effectiveness test. The measurability and causality scores in this document are informative. *(The GR team would like to discuss this issue during our meeting 7/29. GR will has not yet pulled the health, safety, comfort values.)*

15. **Skumatz, L. and M. Sami Khawaja, R. Krop. 2010.** *Non-Energy Benefits: Status, Findings, Next Steps and Implications for Low Income Program Analyses in California.* **Skumatz Economic Research Associates, Inc. (SERA).**
Older report that defines utility-, societal- and participant-NEBs, discusses the implementation for the low-income model in California, and provides suggestions for research to improve the relationships between NEBs and measures. This study also describes the strengths and weaknesses of various methods for measuring NEBs. This report discusses **low income hardship** as a societal benefit**.** According to this study,

"Programs can have an impact on residential illnesses and job retention, on disposable income and bill payments, and ultimately household relocations (p16). " In a later table, is also mentioned "Care" or "hardship" as a participant NEB related to employment and family stability, reduced dependence on state assistance.

- **Metric information or relevant findings:**
  - **Hardship:** "The 2010 NEBs study for Sempra Utilities did not quantify hardship and stated that there have not been many attempts to measure it although the benefit potentially has a high value. The report established that the most reliable calculation method was a participant survey valuation but identified studies that have used a mix of survey and arrearage data related to payment behavior and illness to estimate impacts on employment status, mobility, reduced dependence on state benefits, and family stability" (as summarized in Skumatz et. al 2019).
- **Measurement method:** Cites two older studies (from 2007-2008) that used combinations of arrearage- and survey-based data related to improved utility payment behavior and illnesses to estimate impacts on employment status, mobility reduced dependence on state benefits and family stability. Indicates that a new survey of program participants would need to be conducted to assess hardship accurately.
- **GR notes:** This report seems to indicate that hardship has not been well defined or quantified and would require a participant survey and review of arrearage data. Note that the 2019 report is an updated version of this older report.

16. **Stats NZ. 2017**. *Investigating different measures of energy hardship in New Zealand.* **Retrieved from www.stats.govt.nz. ISBN: 978-1-98-852815-1 (online).**
New Zealand report that defines energy hardship as financial hardship tied to an inability to stay warm. The study's purpose was to develop a measure of energy hardship using quality data that could be then collected over time.

- **Metric information or relevant findings:** They asked people about five different indicators of energy hardship and counted a person as experiencing actual hardship *if there were two or more positive answers.*
  - **Percent of after housing cost income spent on domestic energy (i.e., energy burden).** An indicator of hardship was when more than 10% of household income (or income adjusted by household size) was required to adequately heat the home
  - **Whether there was difficulty paying utility bills on time (i.e., disconnects).** In this study, disconnects due to non-payment was considered an indicator of extreme energy hardship and use of prepayment metering was a sign of a household struggling to pay power bills.
  - **Whether heating or keeping the dwelling warm in winter was a problem (i.e., comfort).** Study authors saw this as a direct indicator of "fuel poverty" and considered hardship to not being able to keep the dwelling at least to ~61° F. They tied this to perception of feeling cold as well.
  - **Whether dampness or mold was a problem (i.e., health).** Study authors considered the presence of dampness and mold as a significant issue related to fuel poverty and tied the cold and damp to higher seasonal mortality rates and higher incidence of both cardiovascular and respiratory disease. They found a large overlap with households that has difficulty heating their dwelling or keeping warm and problems with dampness or mold.
  - **Energy burden does not necessarily lead to energy hardship**. Study authors describe those experiencing energy hardship as "households that cannot afford to heat their homes adequately, or afford other basic energy services, for example, sufficient hot water. In some cases, households may not be able to afford heating at all." They found low correlation between apparent energy burden and energy hardship. "Overlap between subjective and objective measures was relatively low with, for

example, just 15.4% of households that paid 10% or more of their income on domestic energy experiencing a major problem with heating or keeping their home warm in winter." However, they also stated that low-income householders were twice as likely to experience difficulty paying a utility bill on time and to experience cold/and or damp home conditions.

- **Measurement method:** Study authors used both national survey data (including household income, housing costs, and energy costs) and a national census on population and dwellings to determine their indicators. They analyzed using a count of the number of positive individual indicators within a household versus a composite index to describe energy hardship and recommended using the "number-of-indicators" approach because it was easier to understand.

  Further, the document authors state that energy hardship is "hard to measure directly but we can use some information from available statistics through consensual (self-reported) and objective measures. Consensual measures include households that have trouble paying energy bills on time, find their house damp, too cold / difficult to heat, or do not use heating. Objective measures use information on the proportion of household income spent on household energy."

- **GR notes:** This study may support the use of multiple indicators in place of a composite or index. Note that the California studies where an index was presented could be broken out into their component parts. This study also indicates that energy burden may be a poor indicator of hardship.

17. **Capps, Curry, Levine. 2019.** *Energy-Plus-Health Playbook.*
    Report that focuses on how to implement programs that include both energy efficiency and health remediation actions. Provides specific lessons learned from eight different case studies. The document describes several findings related to health, comfort, and safety.

    - **Metric information or relevant findings:**
      - **Health-related:** Study showed specific monetized benefits of four health related benefits. Below we provide certain participant benefit values, although the study included monetized benefits for society for these four areas as well.
        - Reduced asthma symptoms - $9.99 / HH / year in one study and another one that found 66% of clients with asthma reported their asthma was better controlled one year after weatherization made in conjunction with community health workers with fewer asthma emergency department visits or hospitalizations.
        - Reduced cold-related thermal stress: $463.21 / HH / year
        - Reduced heat-related thermal stress: $145.93 / HH / year
        - Fewer missed days at work: $149.45 / HH / year
      - **Fewer falls** (**i.e. safety**): Study noted that adding injury prevention home assessments with modification and repairs reduced falls from baseline to 6 months post-intervention follow from 94% to 9% and reduced calls for assistance from 23% to 3%.
      - **20% of properties may need home remediation:** Not specific to the metrics associated with HHRI, but a data point that can help understand the future program needs for dwelling updates. A 2017 study found that ~20% of properties receiving energy assessments failed to meet health and safety standards for energy efficiency interventions and were deferred because of asbestos hazards, vermiculite, moisture issues, or carbon monoxide leaks
    - **GR notes:** This report provides step-by-step guidance and tips for integrating comfort, health, and safety activities into an energy efficiency program. It indicates possible areas to consider for a future HHRI.

Attachment A. ESA And CARE Program Definitions

- **Energy Savings Assistance (ESA) Program:** The ESA program provides no--cost home weatherization services and energy efficiency measures to help low-income households: (1) conserve energy; (2) reduce energy costs; and (3) improve health, comfort and safety. The program also provides information and education to promote energy efficient practices in low - income communities. Income eligibility for ESA participation is set at 200% or below of Federal Poverty Guidelines.
- **California Alternative Rates for Energy (CARE) Program:** The CARE Program is a low-income energy rate assistance program instituted in 1989, providing a discount on energy rates to low-income households with incomes at or below 200% of the Federal Poverty Guideline. Households that participate in certain means tested programs are also eligible for CARE. Qualified customers also consist of various individuals, including residents in non-profit group living facilities, agricultural employee housing facilities, and migrant farm worker housing centers. Currently, electrical corporations serving 100,000 customers or more must provide a discount of 30 to 35% on average to eligible CARE Program participants, relative to the equivalent non-CARE customer bill.8 CARE participants also receive a 20 percent discount off of natural gas charges.[7]

[7] These definitions are taken directly from the CPUC's decision.

Attachment B. Policy Considerations

In the table below, we present past and current policy guidance to provide context to the bibliography. We note that not all of the references directly relate to the development of an HHRI metric.

On February 21, 2019, there was also a proposed assembly bill introduced to the California Legislature (AB 961). While we are unsure of the status of this bill (it is in committee and held under submission), AB 961 would direct the Commission to define, develop and track non-energy benefits for distributed energy resource programs (including energy efficiency programs) and projects in environmental and social justice communities. PG&E's efforts to develop non-energy related metrics may support this effort if AB 961 is put into law.

Table 1. Summary of Relevant Policies and Guidance

Policy Drivers	Guidance Given	How Policy Relates to LI HHRI (or ESA/CARE)
D.16-08-019	Decision Providing Guidance for Initial Energy Efficiency Rolling Portfolio Business Plan Filings	
D.18-01-004	Decision Addressing Third Party Solicitation Process for Energy Efficiency Programs	
D. 18-05-041	Decision Addressing Energy Efficiency Business Plans	
D. 18-12-015 Decision Approving San Joaquin Valley Disadvantaged Communities Pilot Projects	Approved 11 electrification pilots totally $50.7 million with SCE and PG&E serving as pilot administrators for three pilots each. PG&E will manage a competitive bid process for five additional pilots. SoCalGas is approved to implement one natural gas pilot and with budget for potentially two more gas pilots (a total of $5.6 million). The decision lists measures included for low-income households. The described pilots include solar, energy efficiency and workforce development opportunities. The pilots proposed on-bill financings with zero percent interest and repayable over 10 years. ESA customers within the pilots can include weatherization or water heating measures prior to installing space heating or water heating equipment (an exemption from general ESA requirements). Solar thermal water heating systems are to be fully subsidized.	The pilots are an opportunity to further research economic hardship. Assuming a large number of low-income customers participate in the pilots, it may be possible to measure how the addition of solar and electrification affect economic hardship.
Environmental and Social Justice Action Plan (V 1.0)	The CPUC articulated nine goals to help advance the state's vision for equity, and listed actions to move the state toward these goals. (1) Consistently integrate equity and access considerations throughout CPUC proceedings and other efforts. (2) Increase investment in clean energy resources to benefit ESJ communities, especially to improve local air quality and public health. (3) Strive to improve access to high-quality water, communications, and transportation services for ESJ communities. (4) Increase climate resiliency in ESJ communities. (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. (6) Enhance enforcement to ensure safety and consumer protection for ESJ communities. (7) Promote economic and workforce development opportunities in ESJ communities. (8) Improve training and staff development related to ESJ issues within the CPUC's jurisdiction. (9) Monitor the CPUC's ESJ efforts to evaluate how they are achieving their objectives.	Prioritize actions that improve air quality, public health, climate resiliency, and economic benefits. Limited application to our review. Goal 9 supports evaluating how programs like ESA and CARE are impacting ESJ communities (that is, it supports the use of metrics). Goal 4 directs stakeholders to "look at interdependence of *essential services* in ESJ communities."
AB 2672 (Perea 2014)	Evaluate how the San Joaquin Valley Pilot Programs are leveraging the ESA program to weatherize homes	Helps inform ESA new and innovative design
AB 3232 (Friedman 2018)	Assess potential by 2021 to reduce GHG emissions by 2030 in commercial and residential building stock by at least 40% below 1990 emissions levels associated with the supply	Helps inform ESA goals/design
SB 350 (DeLeon 2015)	Statewide target to reduce GHG emissions by 40% below 1990 levels. CEC is to create a plan by 2029 to achieve statewide doubling of EE savings and demand reduction by 2030	Helps inform ESA goals/design
SB 1477	Required 30% funding for new construction will be for low income housing electrification program, plus decarbonization of new construction and building policy	Helps inform ESA
Order Instituting Rulemaking Regarding Building Decarbonization (February 8, 2019)	The CPUC put this OIR in place to begin crafting a policy framework surrounding decarbonization of buildings. The initial respondents are the large natural gas corporations regulated by the CPUC as well as the large investor owned electric distribution utilities. Specifically, respondents are SoCalGas, PG&E, SDG&E, Southwest Gas and SCE.	The BUILD pilot program has limited application for our review. The TECH pilot program is somewhat tied to medical hardship as it is slated to include technologies with the greatest potential for

Policy Drivers	Guidance Given	How Policy Relates to LI HHRI (or ESA/CARE)
	The CPUC expects to use the OIR for multiple purposes that address four general categories of issues: 1) implementing SB1477 (see above), 2) potential programs to address new construction in areas damaged by wildfires, 3) coordinating with the CEC on Title 24 (building codes) and Title 20 (appliance standards), and 4) establishing a building decarbonization policy framework. Initially, the scope will focus on developing two pilot programs designed to test specific programmatic approaches to building decarbonization (per SB 1477, Stern 2018). These new programs are the Building Initiative for Low Emissions Development (BUILD), and Technology and Equipment for Clean Heating (TECH). BUILD will incent deployment of building technologies in new buildings for the purpose of reducing GHG emissions significantly beyond what would have occurred through compliance with Title 24 prescriptive standards. TECH will incent deployment into new and existing residential buildings of low-emissions space and water heating technologies that are in an early stage of market development.	improving health and safety as well as energy affordability for low-income households.
LIOB White Paper and Letter* (2018)	Identifies 15 areas of primary focus to help guide the LIOB ESA post-2020 goals. The white paper does not specifically state addressing "hardship" but does describe more effectively reaching and benefiting disadvantaged communities burdened by pollution and socio-economic challenges (both which can create economic or health hardship). Additionally, the LIOB describes a goal of identifying ways that ESA can "achieve more with health, comfort, safety, and resilience standards, objectives and guidelines" through public/private partnerships	Supports using areas such as health, safety, and comfort within certain hardship metrics, but is not specifically targeted to help determine what hardship is.

*Low Income Oversight Board (LIOB). 2018. *Low Income Oversight Board ESA Post-2020 White Paper and Letter.* Email submission to Public Advisor@cpuc.ca.gov

Attachment C. Collections and Disconnect Data Examples

Total Number of Collections Actions – PCAP Participants						
	2013		2014		2015	
	Non-Electric Heat	Electric Heat	Non-Electric Heat	Electric Heat	Non-Electric Heat	Electric Heat
Number of Customers	13,508	2,466	13,440	2,461	15,086	2,769
No Actions	37%	33%	39%	31%	38%	34%
1-4 Actions	15%	14%	15%	15%	16%	16%
5-8 Actions	8%	10%	8%	11%	9%	10%
9-12 Actions	12%	11%	13%	13%	15%	14%
13-16 Actions	8%	9%	8%	9%	8%	8%
>16 Actions	21%	22%	17%	20%	15%	17%
Total	100%	100%	100%	100%	100%	100%

Mean Number of Collections Actions for PCAP Participants						
	2013		2014		2015	
	Non-Electric Heat	Electric Heat	Non-Electric Heat	Electric Heat	Non-Electric Heat	Electric Heat
Number of Customers	13,508	2,466	13,440	2,461	15,086	2,769
Outbound Dialing	3.3	3.7	2.8	3.3	2.5	2.7
Inbound Calls	2.6	2.6	2.7	2.8	2.9	3.0
Letter	1.8	1.8	1.4	1.6	1.4	1.4
Mailed Termination	0.6	0.9	0.5	0.8	0.4	0.7
Notices	0.3	0.4	0.2	0.3	0.2	0.3
Disconnection	<0.1	0.1	<0.1	0.1	<0.1	0.1
Total	8.7	9.4	7.8	9.0	7.4	8.2

Attachment D. Energy and Household Burden- additional information

This table from the2016 LINA study summarizes the metrics and calculation methods.

Table 23: Measures of Energy and Household Burden

Measure	What it Measures	Calculation Method	Meaning of Categories
Energy burden	Actual home energy costs as a percentage of household income	Household Energy Bill Self-Reported Gross Household Income	• High: 6.3 percent or higher • Medium: 3.9 to 6.3 percent • Low: 1.0 to 3.9 percent • Very low: energy burden < 1.0%[29]
Modified energy burden	Actual home energy costs plus valuation of medical, housing, and food stamp assistance as a percentage of self-reported gross household income	Household Energy Bill Self-Reported Gross Household Income + Valuation of Non-Cash Assistance	Same breakpoints as for energy burden
Energy insecurity	Household challenges regarding affordability of energy bills and monthly trade-offs between meeting energy needs and bill payments	Points allocated based on responses to survey questions about: • Difficulty household faces in paying energy bill (C5) • Household disposition to and motivation for saving energy (A19) • Equipment-related inability to keep home temperature comfortable (A15/A18)	Primary assignment based on challenges paying energy bill (with adjustments based on other inputs): • High: Constantly struggle (or usually struggle with high degree of energy saving practices) • Medium: Usually struggle • Low: Sometimes struggle • None: Never struggle and few energy practices motivated by need
Material hardship	Household challenges regarding broader affordability of basic necessities as food, shelter, and energy, etc.	Points allocated based on: • Federal Poverty Level (FPL)** • Survey question about difficulty of paying household bills and basic living expenses (C2)	• High: LI and regularly or sometimes struggles with basic living expenses* • Moderate: LI and sometimes or occasionally struggle with basic living expenses* • Low: MI and occasionally or never struggle with basic living expenses* • None: MI or HI and never struggle with basic living expenses*

*The formula for this metric also distinguished between different FPLs within the low-income and moderate income ranges, so households with similar self-reported struggles with basic living expenses could be classified in different categories based on their income. See Appendix C for more detail.

**Federal poverty level was based on self-reported income and household size.

Attachment E. Economic and Health Hardship Indicators

Summary slides from RIA presentation|2017 IEPEC Conference, Baltimore, MD | August 8, 2017

Economic Hardship Index Was Constructed from Four Questions and 18 Items

- Consumer Financial Protection Bureau's Financial Well-Being Questions
  - Asks how well three items about economic outlook describe the customer (5-point scale: 'Not at all' to 'Completely')
  - Asks how often two items about their financial situation describe their situation (5-point scale: 'Never' to 'Always')
- Problems Paying Bills
  - Asks how many times (0, 1, 2, or 3 or more) a customer had difficulty paying their…
    - Electricity bill
    - Bills for other basic needs
- Alternative Ways Used to Pay Bills
  - Asks about 10 methods customers used paid bills other than using their current income (check all that apply)
- Concern for Bill Payment
  - Asks the extent to which customers agree that they often worry if they have enough money to afford electricity bill (10-point scale: 'Not at all' to 'Completely')

Health Hardship Metric Used Three Questions

- A health hardship index did not work
- Constructed a simpler health hardship metric using:
  - *Experienced Medical Events*: Since June 2016, how often, … did members of your household need medical attention because it was too hot inside your home? (0 to 10 times, or more than 10 times)
  - *Has Disability*: Does anyone in your household have a disability or ….condition that requires … home to be cooled in the summer? (**Yes** or No)
  - *Has Air-Conditioning in Home*: Do you have any of the following …. central AC, room AC unit, evaporative/swamp cooler, heat pump (**Yes** or No)

Attachment F. Benefits of Weatherization - additional information

This table from the report, Tonn, B, Rose, Erin, Hawkins, Beth, and Conlon Brian. Oak Ridge National Laboratories. 2014. *Health and Household-Related Benefits Attributable to the Weatherization Assistance Programs.*

Table E.S.1. Present Value of Per Unit and WAP Program Health-Related Benefits of Weatherization

	Total	Total (Value of Life Excluded)	Tier 1		Tier 2		Tier 3	
			Societal	Household	Societal	Household	Societal	Household
Asthma	$2,009	-	$1,852	$157				
Thermal Stress-Cold	$3,911	$172	$3,892	$19				
Thermal Stress-Heat	$870	$85	$855	$15				
Food Assistance Reduction	$832	-	$832					
Reduction in Missed Days at Work	$201	-	$40	$161				
CO poisoning	$154	$7			$153	$1		
Improvement in Prescription Adherence	$1,929	-			$1,929	-		
Reduction in Use of Short-Term Loans	$71	-			-	$71		
Home Fires	$831	$175					$768	$63
Increased Productivity at Work Due to Improved Sleep	$1,813	-					$1,813	-
Increased Productivity at Home Due to Improved Sleep	$1,329	-					-	$1,329
Reduction in Low-Birth Weight Babies from Heat-or-Eat Dilemma	$198	-					$198	-
Total by Tiers (Present Value Per Unit)	$14,148	-	$7,471	$352	$2,082	$72	$2,779	$1,392
			$7,823		$2,154		$4,171	
Total by Tiers (Present Value WAP Program)	$1,136,883,221	-	$600,333,094	$28,295,957	$167,310,541	$5,766,863.04	$223,324,724.16	$111,878,910.72
			$628,629,051		$173,077,404		$335,176,766	

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Example of Uncertain information from the report

B.2.1 Reduced Carbon Monoxide Poisonings

Direct Outcome: Reduction in Carbon Monoxide Poisoning Risk

Level of Inherent Uncertainty	**Is there a logical link between Wx and this outcome?**	**What is the fundamental research task?**	**Is the phenomenon underlying the NEB directly observable?**	**In what type of system does the underlying phenomenon exist?**	**What was the research design implemented to collect data about this phenomenon?**	**How many confounding factors could the phenomenon be attributed to?**
Rating	Low	Low	Low/Medium	Low	Low	Low
Comments	A tenet of the program that Wx will take care of CO problems	Fact establishment	Inferred from installation of Wx measures	Linear, there is a straightforward relationship between installing CO monitors and reducing CO poisoning	Strong experimental design to collect data on the installation of CO monitors	Few to none.

Level of Operational Uncertainty	**Was the phenomenon directly measured?**	**Was the sample size representative?**	**Are the data of high quality?**	**Was the estimation procedure used reasonable?**
Rating	Medium	Low	Low	Low
Comments	Reduced poisoning and deaths from CO were not observed. Instead, these benefits were inferred from installation of CO monitors	Yes, a large and representative sample of weatherized homes was used.	Yes, straightforward to report whether a home received a CO monitor	Straightforward descriptive statistics.

Level of Use Value Uncertainty	**How up-to-date are the data?**	**How much were the results generalized for this policy context?**	**How relevant is this variable to this policy context?**
Rating	Low	Low	Low
Comments	Very recent data	No generalizations were needed	Very relevant

Attachment G. Additional information

This table from the report from Wilson, Jonathan, Jacob, David, Reddy, Amanda, Tohn, Ellen, Cohen, Jonathan, Jacobsohn, Ely. Oak Ridge National Laboratories. 2016. *Home Rx: The Health Benefits of Home Performance.*

Category	Lead Author, Publication Date	Study Design						Outcomes (a)			Demographics			Literature Citation
		Study Type	Study Population Size	Follow-Up Period	Comparison 1	Comparison 2	Comparison 3	Healthcare Use	Health	Indoor Environment	Building Type (b)	Income Level (c)	Location	
ENHANCED ENERGY EFFICIENCY	Lloyd 2008	Comparison study of energy-efficient upgrades v. no changes	36 adults	12-30 months	Package	Control	NA	Case report of fewer admissions to hospital for cardiovascular issues (non-significant)	Significant reductions in blood pressure (trx v. ctl) Improved general health	Not Studied	MF	MIXED	Great Britain	Lloyd EL, McCormack C, McKeever M, Syme M. (2008). The effect of improving the thermal quality of cold housing on blood pressure and general health: A research note. Journal of Epidemiology and Community Health,62(9), 793-797. doi:10.1136/jech.2007.067835
ENHANCED ENERGY EFFICIENCY	Leech 2004	Case-control study of new energy-efficient residential buildings vs standard buildings	105 homes/128 individuals	12 months	Package	Standard New Construction	NA	Not Studied	Overall asthma symptom score better in R-2000 homes Less throat irritation, cough, fatigue, and irritability in R-2000 homes	Not Studied	SF	MR	Canada	Leech JA, Raizenne M, Gusdorf J. (2004). Health in occupants of energy efficient new homes. Indoor Air 14, 169–173. doi:10.1111/j.1600-0668.2004.00212.x
ENHANCED ENERGY EFFICIENCY	Wallner 2015	Comparison study of passive houses v. conventional	123 homes	12 months	HRVs present	Natural Ventilation	NA	Not Studied	Not Studied	Better IAQ. formaldehyde, radon, CO2 20% lower RH in EE homes	MIXED	MR	Austria	Wallner P, Munoz U, Tappler P, Wanka A, Kundi M, Shelton JF, Hutter HP. (2015) Indoor Environmental Quality in Mechanically Ventilated, Energy-Efficient Buildings vs. Conventional Buildings. Int J Environ Res Public Health. 6;12(11):14132-47. doi: 10.3390/ijerph121114132.
ENHANCED ENERGY EFFICIENCY	Spertini 2010	Comparison study of energy-efficient residential buildings vs standard buildings	78 homes/181 individuals	20-26 years after construction	Package (installed at construction; average age 20 yrs)	Natural Ventilation (Average age 26 yrs)	NA	Not Studied	Percent of people with signs/symptoms of allergies not significantly different	89-93% less dust mite allergen in carpet/mattresses in EE homes 11% lower RH in EE homes 5% higher temperature No significant difference in cat or cockroach allergens	MF	MR	Switzerland	Spertini F, Berney M, Foradini F, Roulet CA. (2010). Major mite allergen der f 1 concentration is reduced in buildings with improved energy performance. Allergy, 65(5), 623-629. doi:10.1111/j.1398-9995.2009.02230.x
														Rose E, Hawkins B, Tonn, B, Paton

9. Appendix D: PG&E's Pilot Program Final Report on Consumption-Driven Weatherization

Pilot Program Final Report on

Consumption-Driven Weatherization

Prepared for:

Pacific Gas and Electric Company

and

California Department of Community Services and Development

Prepared by:

Richard Heath and Associates, Inc.
January 2019

Pilot Program Report on
Consumption-Driven Weatherization

Table of Contents

Table 1: Table of Common Acronyms and Terminology

TABLE OF ACRONYMS/TERMS AND THEIR DEFINITIONS	
Always-On	A measure of the continuous kilowatt draw in a home.
Annual Electric Baseload (kWh)	The amount of electricity that is consumed by a dwelling to meet the minimum demands of occupying that dwelling.
Annual Gas Baseload (Therms)	The amount of natural gas that is consumed by a dwelling to meet the minimum demands of occupying that dwelling.
CAS Protocol	(CSD) Combustion Appliance Safety Protocol
CDD	Cooling Degree Day—The measurement designed to quantify the demand for energy needed to cool a building.
CDWx Pilot	Consumption-Driven Weatherization Pilot
CPUC	California Public Utilities Commission
CSD	California Department of Community Services and Development
DOE	Department of Energy
ESA Program	Energy Savings Assistance Program
HDD	Heating Degree Day—The measurement designed to quantify the demand the energy needed to heat a building.
HEUs	High energy users; high energy usage; high energy using
Home Cooling Energy Use Index (BTU/CDD/sq. ft.)	Computed for each home using the seasonal cooling load, number of CDD, and the home's square footage. The cooling electric load is calculated by subtracting the base load from the total electric usage. The cooling electrical load is converted to British thermal units (BTUs) by multiplying by 3,413 BTUs/kWh, then dividing by the CDD, and finally dividing by the square footage.
Home Heating Energy Use Index (BTU/HDD/sq. ft.)	Computed for the home using the seasonal natural gas load, number of HDD, and the home's square footage. The heating load is calculated by subtracting the natural gas base load from the total natural gas usage. The heating gas load is converted to BTUs by multiplying by 1 million BTUs/therm, then dividing by HDD, and dividing by the square foot.
IS	(Statewide) Installation Standards
IOU	Investor-Owned Utility

TABLE OF ACRONYMS/TERMS AND THEIR DEFINITIONS	
LIHEAP	Low-Income Home Energy Assistance Program
NGAT	Natural Gas Appliance Testing
Peak Ratio	Calculated for the Pilot to be the ratio of summer electric usage (Jun-Sept) to winter electric usage (Feb, Mar, Nov, Dec).
PG&E	Pacific Gas and Electric Company
Provider	Entity providing installation services for the pilot.
QRS	(CDWx) Quick Reference Standards
Seasonal Cooling Load (kWh)	The amount of electricity that is consumed by a dwelling to meet the cooling demands of that user and that dwelling.
Seasonal Heating Load (therms)	The amount of natural gas that is consumed by a dwelling to meet the heating demands of that user and that dwelling.
WIS	(CSD) Weatherization Installation Standards

Final Report for the Consumption-Driven Weatherization Pilot

1. EXECUTIVE SUMMARY

The Consumption-Driven Weatherization (CDWx) Pilot concept was designed by Pacific Gas and Electric Company (PG&E) and approved by the California Public Utilities Commission (CPUC) in Final Decision 16-11-022 and Modified Final Decision 17-12-009[1]. Utilizing a consumption data-driven methodology, the Pilot targeted high energy usage (HEU) households (defined as those with greater than 400 percent of baseline usage) and prescribe weatherization measures that fall outside current Energy Savings Assistance (ESA) Program guidelines. During the Pilot's design and planning phase, a partnership with the California Department of Community Services and Development (CSD) was forged to leverage the Low-Income Home Energy Assistance Program (LIHEAP) resources and increase the total measure installation offerings for households.

In contrast to the "all feasible measures" weatherization approach, the CDWx Pilot planned and tested a process for using individual household usage data, which would result in a prescribed suite of energy efficiency measures. Measure prescriptions were tailored to decrease high usage in specified areas, such as high heating, high cooling, or high electric or gas baseload. The CDWx Pilot used this alternative approach to test alternative household targeting and dwelling assessment practices, identify new measures that could be added to the existing ESA Program, and collect quantitative and qualitative data to inform recommendations for future program models.

Documentation of the full CDWx Pilot process, as undertaken by PG&E and CSD, and was prepared by Richard Heath and Associates, Inc. and includes discussion in the report of these components:

- Pilot goals and scope (Section 2.2).
- Planning and design decisions (Section 3).
- An alternative weatherization process (Section 3.6).
- Pilot implementation (Section 4).
- Significant findings and conclusions (Sections 5 and 6).
- Future program considerations (Section 7).

1.1 PILOT GOALS

As proposed by PG&E and included in CPUC Decision 17-12-009[2], the CDWx Pilot would serve 50 homes and define:

> "…new methods for identifying high energy usage CARE [California Alternate

[1] CPUC Decision 16-11-022; Modified Decision 17-12-009, pages 381 -382
[2] CPUC Decision 17-12-009, page 375

> Rates for Energy] participants, based on analysis of AMI Data. Specifically, smart meter data is proposed to be used to identify CARE customers with either: (1) high cooling loads; (2) high heating loads; or (3) high electric or gas base loads. PG&E [also seeks] to target these homes with customized weatherization measures that may fall outside of standard ESA Program restrictions…"

Furthermore, based on additional CPUC interest parameters established in the same Decision, it was determined that the Pilot-targeted households should be single-family CARE Program-qualified households that: 1) exceeded 400% of baseline usage, 2) had never been served in the ESA Program, 3) had both gas and electric accounts, and 4) had 18 months of gas and electric usage data. To meet the established Pilot goal described above, a scope of work was defined to:

- Identify new weatherization measures for the CDWx Pilot that fall outside of the existing ESA Program.
- Design and adopt an AMI-driven alternative weatherization process to identify HEU households and the suite of targeted measures for each household based on actual usage.
- Develop an enhanced dwelling assessment process to include measure feasibility evaluations for new (outside of the ESA Program) measures and existing weatherization measures.
- Evaluate the alternative weatherization process and determine how this process could be successfully applied to the standard ESA Program model for HEU households.

1.2 Key Design & Planning Decisions

A three-phased approach of the CDWx Pilot was designed and implemented as depicted in **Figure 1** below:

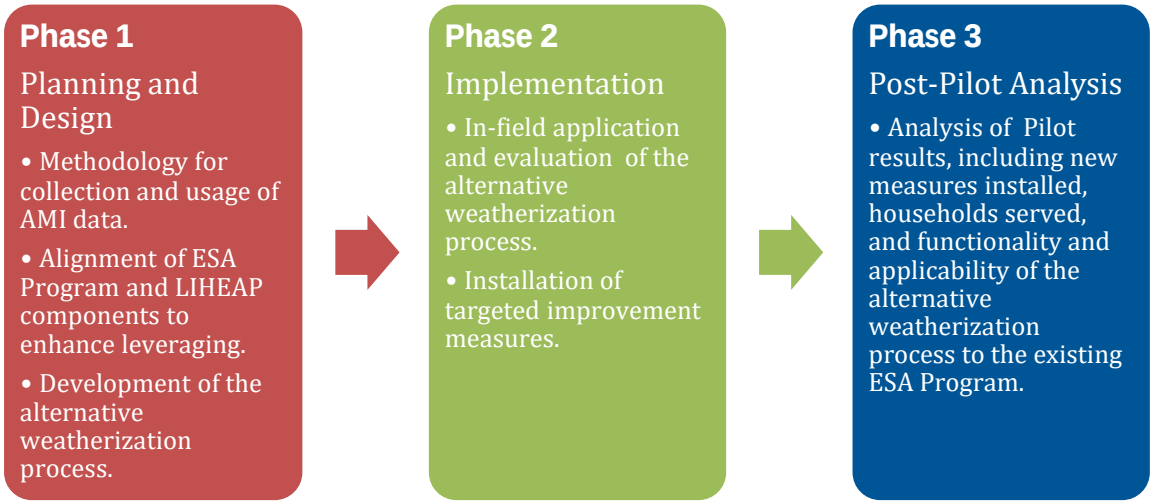

Figure 1: Summary of the CDWx Program

Early decisions during the design and planning phase of the Pilot defined the AMI data analysis methodology and aligned the enrollment and service polices of the existing ESA Program with CSD LIHEAP policies in order to maximize the potential measure offerings for the HEU households. At this time, PG&E and CSD determined that Dual Providers would be used to

provide the dwelling assessments and measure installations. This decision would reduce the overall number of customer "touches" (e.g., telephone calls, home visits, etc.), which became an additional program objective in the scope of work.

Subsequently, the Stakeholder Work Group (composed of PG&E, CSD, and three Dual Providers) developed the alternative weatherization process that consisted of seven steps as defined in **Figure 2** below. Each step in the alternative process offered program enhancements to improve services for the HEU households. Providers received personalized training in each of these steps and were offered additional technical assistance as needed.

Figure 2: Alternative Weatherization Process

During the Implementation phase of the Pilot, this alternative weatherization process was applied and tested, including the installation of usage-specific measures for HEU households.

Finally, the post-Pilot analysis evaluated the overall Pilot success and applicability of the Pilot processes to the standard ESA Program.

1.3 Overview of Findings

During the CDWx Pilot, fifty HEU households were assessed and received a customized suite of weatherization measures. The findings below are comprised of quantitative and qualitative results:

- Incorporation of 11 new energy-saving measures increased the ESA Program offerings by 35 percent for the HEUs.
- Of the homes served in the Pilot, 90% of the households received the new energy-saving measures.
- As many as 33 measures were installed in a single home during the Pilot.
- Collaborative leveraging of programs decreased the number of customer touch points 50% by bundling home assessment and installation visits required for each leveraged

program into a single visit.

- The Pilot demonstrated that AMI data can be effectively used to target HEU customers. Of the 5,732 households identified as high energy users with complete data sets, approximately 3,032 households (53%) were targeted as potential candidates for the alternative weatherization process.
- As a group, the "never-served" HEU households seemed to be less reliable and less motivated to participate as exemplified by a higher number of contact attempts required and a large percentage of missed or cancelled appointments.
- It was more difficult for customers to meet the federally-regulated LIHEAP income eligibility requirements than to meet the ESA Program income requirements.
- Utilizing tablet-based electronic forms allowed for streamlined enrollment and home assessment processes, reducing intake time.

1.4 CONCLUSIONS

Conclusions from the CDWx Pilot include the following:

- The Pilot demonstrated that AMI data can be used as an appropriate tool to: 1) identify high usage customers, and 2) determine the most appropriate measures for HEU households.
- The incorporation of the CDWx measures resulted in the installation of deeper weatherization measures and more measures installed per home.
- Customer impacts (i.e., additional measures installed, reduced customer "touches", etc.) continue to be maximized by strategically leveraging resources and utilizing Providers that serve dual weatherization programs for the installation of measures.

1.5 FUTURE CONSIDERATIONS FOR A CONSUMPTION-DRIVEN APPROACH

Based on the experiences of the CDWx Pilot, it is recommended that a consumption-driven weatherization approach be applied to future ESA Programs. For this enhancement to occur, the following items are provided for consideration:

Modifications to the Existing ESA Program Approach

- Offer many of the CDWx Pilot measures as standard ESA Program measures.
- Apply AMI analysis to all ESA-qualifying households to identify HEU households for participation in an alternative program path, which would include usage-tailored measures based on AMI data.
- Determine if existing measure feasibility requirements need adjustment to align with a consumption-driven approach.
- Consider expansion of the alternative weatherization approach for HEU households throughout PG&E's service territory.

Customer Targeting and Data Acquisition

- Provide complete customer datasets on an on-going basis for HEU targeting.
- Expand the definition of high energy use to incorporate other factors that affect energy usage, such as size of a home, number of occupants, geographic location, etc.

- Augment the definition of HEU households in order to identify premises, not only customers.

Leveraging and Training

- Further streamline leveraging processes and align policies with CSD.
- To the extent possible, automate forms for leveraged programs to reduce duplication of entries and required time.
- Because consumption-driven weatherization is a new approach to household targeting and measure identification, training of field and administrative personnel in data collection and the alternative weatherization process is vital.

Recommendations and greater detail are provided in Section 8 ("Recommendations for Future Applications").

2. PILOT OVERVIEW

The CDWx Pilot concept was formulated by PG&E in response to the CPUC Decision 14-08-025, which directed the investor-owned utilities (IOUs) to propose new pilots. In response, PG&E proposed the CDWx Pilot to define new methods of using Advance Metering Infrastructure (AMI) data to target CARE Program participants experiencing high energy usage. This Pilot proposal was originally approved under CPUC Decision 16-11-022[3]. Subsequently, the Pilot was adjusted by the CPUC in Modified Decision 17-12-009[4] to emphasize the identification of additional weatherization measures outside of the current ESA Program that would have greatest impact and reduce high usage for these households.

Consumption-driven programs use actual data to target an end user or an end result. For the CDWx Pilot, the usage analysis was able to accomplish two tasks: 1) identification of households experiencing high usage [defined by the CPUC as usage over 400 percent of baseline], and 2) prescription of a suite of energy efficiency measures specifically tailored to improve the high usage area, such as high heating, high cooling, or high electric or gas baseload. In contrast to the "all feasible measures" approach applied in current statewide weatherization programs, the CDWx Pilot created and tested an alternative weatherization process incorporating these tasks to ensure the most efficient and optimal application of measures.

Although originally intended to be a PG&E-only Pilot, in order to maximize potential energy savings for participating households and the measure offerings received, PG&E invited the California Department of Community Services and Development (CSD) to collaborate on the CDWx Pilot.

2.1 PILOT PHASES

The CDWx Pilot was implemented in three phases. In Phase I, PG&E and CSD defined and formalized the program objectives and goals. During this phase, they devised the methodology for the collection and usage of AMI data and the prescription of measures.

In Phase II, the alternative weatherization process was implemented and included:

- Development of the AMI methodology.
- Customer outreach, enrollment, and energy education.
- Verification of prescribed measure components.
- Installation of measures to enhance energy efficiency.

The final Pilot analysis was conducted in Phase III and incorporated quantitative and qualitative data. This analysis was intended to identify successes and challenges from the CDWx alternative weatherization approach, inform recommendations for incorporation into the ESA Program, and identify new measures for HEUs households.

[3] D. 16-11-022, pages 382 -384
[4] Modified D. 17-12-009, pages 391 -392

2.2 PILOT GOALS AND FINAL SCOPE

The CDWx Pilot goal was established by CPUC Decision 16-11-022 and in Modified Final Decision 17-12-009[5] to encourage the installation of additional measures outside of the standard ESA Program for AMI-identified HEUs. To explore alternative approaches to reach these HEU households and discover deeper energy savings, the CDWx Pilot scope of work was designed to achieve three primary objectives:

1) Use AMI data to identify and screen HEUs to determine if the home is an appropriate candidate for an alternate targeted weatherization process.
2) Develop an alternative weatherization process to include:
    a. An assessment process based on AMI data.
    b. A suite of weatherization measures, customized for each household, that specifically targets HEUs based on metered energy consumption[6].
    c. Evaluation of a process to integrate CSD weatherization measures with the PG&E ESA Program measures.
3) Reduce the number of customer "touches" (e.g., telephone calls, home visits, etc.).

In order to achieve the Pilot goal and the additional objectives, it was necessary to fully understand the existing weatherization program structures, policies, and regulations. For this reason, considerable time was spent in the Planning and Design phase to identify key activities and decisions.

[5] D. 16-11-022; Modified 17-12-009, pages 381 -382
[6] Suites of measures would be composed of PG&E, CSD, and CDWx-specific measure offerings.

3. PHASE I PLANNING & DESIGN

Phase I of the CDWx Pilot consisted of multiple layers of goal-setting, policy comparison, and proposed leveraging decisions. The entire planning process spanned more than a year and required input from key participants described below.

3.1 PILOT STAKEHOLDERS

During the initial phase of the Pilot, input and feedback was gleaned from:

- Project Partners: PG&E and CSD energy efficiency staff.
- Facilitator: Richard Heath and Associates, Inc. (RHA).
- Dual Providers (contractors who provided measure installation services for both PG&E and CSD): Administration, installation, and fiscal staff.

During Phase I, the Core Team, composed of the Project Partners and the Facilitator, tackled initial planning and goal-setting. After the Core Team clearly established the Pilot goals, the Stakeholder Work Group (consisting of the Core Team and selected Dual Providers) handled policy review and decision-making tasks.

3.2 CORE TEAM PLANNING

Figure 3 illustrates the four focus areas that evolved during Core Team planning sessions. These focus areas became the critical tasks that would support the Pilot goals and completion. In defining these tasks, the Core Team ensured that there would be clear outcomes in line with the Pilot goals. Tasks identified by the Core Team during the planning stages of the Pilot included:

- Application of AMI data to identify and target HEU households.
- Development of an improved assessment and weatherization process to better enroll and serve HEU households.
- Selection of high-efficiency measures to apply in the Pilot based on metered consumption.
- Identification of new or improved means to collect program data and merge policies to improve partner leveraging to the extent possible.

The Core Team also identified which Dual Providers should participate in the Pilot. The rationale for selecting these providers is described in Section 3.4.

Figure 3: CDWx Pilot Focus Areas

3.3 STAKEHOLDER WORK GROUP TASKS

Next, the Stakeholder Work Group set the start and end dates for the Pilot and finalized tasks, including better defining the following concepts/components:

- Coordination of outreach and enrollment activities
- Diagnostic and installation policies
- The challenges of varied geographies, climate zones, and building types within the Pilot

- Proposed measures
- Program implementation tools

Each of these components were thoroughly defined by the Stakeholder Work Group to ensure that each stakeholder understood the full scope of the CDWx Pilot and their individual responsibilities within it.

3.4 Weatherization Provider Selection

In 2018, PG&E's ESA Program utilized 34 contractors to install measures. Each contractor employed Energy Specialists, Weatherization Specialists, and Natural Gas Appliance Testing (NGAT) Technicians to perform key program functions.

Similarly, CSD partnered with a network of 41 private, non-profit, and public community-based organizations that provided weatherization services to all 58 counties in California.

In some instances, a single implementer is contracted by the PG&E ESA Program and by CSD to serve the same area. These implementers are known as "Dual Providers." The Core Team agreed that the CDWx Pilot would utilize Dual Providers for the Pilot because they:

- Maintain trained staff in both PG&E and CSD weatherization programs.
- Have access to both programs' databases and billing systems.
- Are versed in the standards and policies of both programs and require less training than agencies that are familiar with only one program.
- Provide valuable insight regarding advantages and challenges of providing services for both programs in customer homes.
- Hold current and active Class C-20 and B (General) contractor's licenses (as certified by the California State License Board).
- Have existing access to all required customer data and, therefore, are not subject to IOU data sharing and privacy concerns, which simplified Pilot coordination efforts.

Based on these criteria, the Dual Providers selected for the Pilot were:

- Self-Help Home Improvement Project (SHHIP).
- Community Action Agency of Butte County, Inc. (Butte County CAA).
- Fresno Economic Opportunities Commission (Fresno EOC).

These targeted Dual Providers defined the geographic areas for the CDWx Pilot (Shasta, Tehama, Butte, and Fresno counties). They were selected to provide sufficient housing stock for the Pilot due to large territories and varied climates.

3.5 Policy Leveraging Opportunities

In order to facilitate the leveraging effort, policy alignment was one of the highest ranked needs identified by the Core Team. For this reason, a great deal of time and effort was spent reviewing current weatherization program policies and standards.

During the Core Team planning and design discussions, CSD's Low-Income Home Energy Assistance Program (LIHEAP) was identified as having fewer program regulations and greater

leveraging flexibility than other federal and state-funded energy efficiency programs administered by CSD. For this reason, it became the best choice for the CDWx leveraged program model. Each of the following weatherization program components were examined to identify opportunities for improved alignment and procedural streamlining:

- Outreach and scheduling
- Enrollment requirements
- Assessment protocols (including data collection)
- Feasibility criteria for measures
- Measure installation standards
- Invoicing/reporting
- Inspection and quality assurance requirements and processes
- Other program requirements

Many of the operational components of the ESA Program and LIHEAP are described the following sections.

3.5.1 PG&E ESA Program

Historically, PG&E has served low-income customers through bill assistance and weatherization. Once a customer was found to be eligible for the ESA Program at enrollment, a residence would be assessed to determine feasible improvements. A household's specific level of usage was not analyzed or addressed, except parenthetically through energy education.

At assessment, a trained Energy Specialist inspected the dwelling and determined the feasibility of a predefined list of energy efficiency measures. Measures would be generally cost-effective, but were not tailored to a household's specific usage or needs. An overview of the ESA Program is provided in **Table 2**.

Table 2: Summary of PG&E ESA Program

PARAMETER	DESCRIPTION
Customer Eligibility	Any low-income PG&E customer in California (with income at 200% of the federal poverty limit or less per CPUC income guidelines)
ESA Contractors (referred to as Provider in this document)	PG&E's ESA Program is administered by two third-party implementers, who contract directly with ESA contractors that perform the ESA work. ESA contractors may be for-profit or non-profit organizations. Program administrators are responsible for ensuring ESA contractors meet the program requirements, including training, licensing, background checks, etc.
Allowable Measures	Program measures address health and safety as well as energy efficiency and must be CPUC-approved. Measure eligibility may be adjusted based on customer building type, climate zone, fuel type, renter or property owner status and are defined in the ESA Statewide Policy and Procedure Manual.

3.5.2 CSD LIHEAP

In parallel to the ESA Program, the federally funded LIHEAP is administered by CSD and funded by the U.S. Department of Health and Human Services.

LIHEAP provides assistance at various levels that include utility bill assistance, assistance in times of state-identified crisis, measures to resolve health and safety issues, and weatherization for energy efficiency. A LIHEAP overview is provided in **Table 3**.

Table 3: Summary of CSD LIHEAP

PARAMETER	DESCRIPTION
Customer Eligibility	Any low-income (defined as 60% of state median income level) customer is eligible in California. Customers are prioritized to serve vulnerable populations and customers with high energy burden first.
Provider Eligibility	Federal regulations require that the program be implemented locally through non-profit organizations. These Provider organizations may hire for-profit subcontractors.
Allowable Measures	Program measures are selected to address health and safety and energy efficiency, to help keep families safe, comfortable, and reduce their energy burden. Measures may reduce usage of *any* fuel, such as electricity, natural gas, propane, fuel oil (kerosene), or wood.

When considering the income eligibility of a household for services, customers participating in LIHEAP bill payment assistance are categorically eligible for the ESA Program; however, customers participating in the ESA Program are not categorically eligible for LIHEAP services. The reason for this is that LIHEAP is bound by a federal regulation that requires income documentation regardless of eligibility for state and other programs; thus, ESA Program categorical qualifications would not be accepted.

3.5.3 Policy Alignment

Based on group discussions, collaborative decisions, and willingness to compromise, the Stakeholder Work Group members successfully outlined the leveraged CDWx Pilot policies as defined in **Table 4**. This advanced work allowed Providers to jumpstart in-house training efforts.

Table 4: Summary of CDWx Program Policy Decisions

POLICY COMPONENT	ESA PROGRAM	LIHEAP	CDWX PILOT	Rationale for Pilot Policy Decision
Contractor Eligibility	ESA Program contractors must hold a Class "B" General Building Contractor's license and all other required licenses and certificates required by the Contractors' State License Board.	Federal regulations require LIHEAP Local Service Providers (LSPs) to be community non-profit organizations. A Class "B" General Building Contractor's license is required, except when waived for a county government entity.	The Pilot design utilized Providers that implement both the ESA Program and LIHEAP and were known as a Dual Providers.	Dual Providers are already well-versed in the requirements of the ESA Program and LIHEAP, reducing the need for additional training and allowing faster Pilot ramp-up.
Marketing/ Outreach	Active marketing/ canvassing for customers is permitted under a statewide "brand" known as the "Energy Savings Assistance Program." A portion of the program budget is reserved for marketing.	LSPs perform appropriate outreach activities to ensure that households in the service area are informed about weatherization program services and have an opportunity to apply for such services. No marketing funds are allocated.	The Pilot Facilitator targets high energy users based on the AMI data analytic methodology. The Pilot Facilitator contacts customers and provides "warm" leads to participating Providers (transfer of calls to the Provider).	By having a central outreach, the Facilitator can ensure consistent Pilot messaging, answer customer questions, and support Providers in their focus on field implementation.
Dwelling Eligibility	The ESA Program promotes reasonably cost-effective energy savings, in addition to health, comfort, and safety benefits. An Energy Specialist must assess the home for all feasible measures and a Weatherization Specialist installs those measures in compliance with the standards.	A minimum of ceiling insulation plus two mandatory measures, or three mandatory measures, must be feasible to perform weatherization services in a single dwelling.	At least one "qualifying measure" from LIHEAP and one from the ESA Program must be feasible. The unit must pass NGAT in accordance with the combustion appliance policy.	The obstacle of measure minimums was removed/reduced by the Core Team in order to ensure that high energy users would be able to participate in the Pilot.

<table>
<tr><th>POLICY COMPONENT</th><th>ESA PROGRAM</th><th>LIHEAP</th><th>CDWX PILOT</th><th>Rationale for Pilot Policy Decision</th></tr>
<tr><td>Household Eligibility</td><td>Open to all customers meeting income requirements at or less than 200% of the federal poverty guidelines per CPUC income guidelines.</td><td>Open to all customers meeting income requirements at or less than 60% of the state median income level.</td><td>Use LIHEAP income levels for all households (60% of state median income).
Use proof of LIHEAP weatherization or bill payment assistance as categorical eligibility for the ESA Program.</td><td>In the effort to simplify customer eligibility, the Core Team adopted a single income guideline. As LIHEAP was the lowest of the two programs at 60% of state median income, the Core Team elected to apply these income levels.</td></tr>
<tr><td>Intake</td><td>Use of income guidelines established by the CPUC to qualify participants. Guidelines are provided on an annual basis. Twelve months of income information is required, or it may be necessary to annualize income from a shorter period of time.
Categorical eligibility is permitted for proof of</td><td>Providers determine the eligibility of applicants seeking services, which include screening the intake application and reviewing applicants' financial documentation.
Income verification must be for one month and current within six weeks of the application intake date, or an</td><td>LIHEAP proof of income is the standard and full income documentation is required.

A tablet-based enrollment application creates both the CSD 43 Intake Form and the PG&E Income Verification and Customer Information Form.</td><td>LIHEAP income documentation requirements are set at the federal level and are not adaptable.</td></tr>
</table>

2018 Maximum Annual Income Levels		
Household Size	LIHEAP/CDWx	ESA Program
1	$25,176	$32,920
2	$32,922	$32,920
3	$40,669	$41,560
4	$48,415	$50,200
5	$56,161	$58,840
6	$63,908	$67,480
7	$65,360	$76,120
8	$66,813	$84,760
9	$68,265	$93,400
10	$69,718	$102,040

POLICY COMPONENT	ESA PROGRAM	LIHEAP	CDWX PILOT	Rationale for Pilot Policy Decision
	participation in various public assistance programs.	annual award letter. Except for HUD-qualified buildings, no categorical eligibility or self-certification is allowed.		
Scheduling	ESA contractors primarily perform their own canvassing, outreach, and scheduling directly with the customer.	LIHEAP contractors primarily perform their own outreach and scheduling directly with the customer.	Facilitator customer service representatives pre-qualify the targeted customer list, deliver a standard description of the pilot opportunity, and transfer all potential customers to the Dual Provider for scheduling.	As a small percentage of the total ESA Program customers, it was decided that this approach would ensure that customers would not be lost or inadvertently treated as standard ESA Program participants.
Energy Education (Based on Usage)	Required. Focuses on reduction of energy usage and behavioral change.	Required. Includes mold/moisture, lead, radon, asbestos awareness, and budget counseling.	Individualized energy education material is created for each customer based on usage data analysis. Measure education is provided based on actual installed measures.	To be most useful to HEUs, targeted energy education was deemed the best method to inform and lead to behavioral change.
Historic Preservation	Not applicable.	For dwellings 45 years of age or older, LSPs are required to process the assessed measures through the State Historic Preservation Office (SHPO). Measures are subject to SHPO review regardless of the program funding the measure.	CSD's historic preservation policies will be maintained for dwellings 45 years of age and older. All applicable measures are subject to existing historic preservation review regardless of the program funding the measure.	This policy only applies to LIHEAP and was adopted.
Dwelling Assessment	An assessment of a qualified applicant's home is completed using a form provided by the utility. The assessment	Providers perform the dwelling's assessment within 120 days of verification of the household's income eligibility	An alternative assessment process will be employed to validate measures assigned	Development of the alternative weatherization process was a goal of the

POLICY COMPONENT	ESA PROGRAM	LIHEAP	CDWX PILOT	Rationale for Pilot Policy Decision
	identifies measures that may be installed.	to receive weatherization assistance services.	during the AMI data analytics process. A tablet-based form will be used to capture information and generate the following forms: • PG&E Home Assessment Form • PG&E Refrigerator and Air Conditioner Application • CDWx Work Order separating measures based on the program to be billed The CSD 540 Assessment Form is completed in addition to the Pilot's electronic tools.	CDWx Pilot and was tested during Pilot implementation.
Diagnostics—Combustion Appliance Safety Test	Combustion appliance safety testing is performed in accordance with the statewide NGAT standard.	Pre- and post-tests performed per CSD CAS Protocol.	Households will receive a pre-CAS test and Post-NGAT evaluation.	This decision was made by the Stakeholder Work Group to ensure individual program requirements were met.
Diagnostics—Duct Testing	Duct testing and sealing as a measure is offered in single-family and mobile homes with ducts. Duct sealing is not required unless initial leakage is at least 16% of airflow. Since the Pilot began, the measure protocol has been modified to require pre- and post- duct testing.	100% of units with ducts require duct testing to identify sealing opportunities. Sealing activities are conducted in priority order as defined by the CSD 706 Form.	Only prescriptive duct sealing is conducted. No duct system testing is required.	This was a test procedure for this Pilot, by mutual decision of the Stakeholder Work Group, to increase program flexibility.

POLICY COMPONENT	ESA PROGRAM	LIHEAP	CDWX PILOT	Rationale for Pilot Policy Decision
Diagnostics—Blower Door	N/A. Provides prescriptive air sealing measures to all homes where the measures are feasible.	Required in 20% of single-family and 5% of multi-family dwellings. Sealing activities are conducted in priority order as defined by the CSD 704 Form.	CSD's blower door–driven air sealing requirement will be waived. Infiltration measures installed in the home will be determined based on AMI data analytics. No blower door diagnostics are required.	This was a test procedure for this Pilot, by mutual decision of the Stakeholder Work Group, to increase program flexibility.
Installation Standards	The *California Installation Standards for the Energy Savings Assistance Program* define the requirements for all approved measures and diagnostic processes.	*CSD Weatherization Installation Standards* define the requirements for all approved measures and diagnostic protocols.	Measures will be installed in conformance with the current adopted Installation Standards and policies of the program to which the measure will be billed. CDWx Pilot measures will comply with the CDWx Quick Reference Standards.	To facilitate contractor familiarity, existing standards were applied in accordance with the program billed. The remaining CDWx measures used "quick reference," user-friendly standards.
Measure Installation	Measure-specific eligibility requirements will be followed. Not all measures are offered in all utility territories or climate zones.	Standardized mandatory measure lists require installation of all feasible measures by LSPs.	Measures will be installed as prescribed by the AMI data analysis. Additional feasible measures may be installed within the ESA Program one year after the CDWx installation date.	Pilot measures were selected based on the CPUC directive to identify known measures that would most affect high heating, high cooling, or high electric or gas baseloads. In addition, measures were considered that were outside of the standard ESA Program offerings. All Pilot measures were allocated to the ESA Program, LIHEAP, or CDWx based on which was the sole

POLICY COMPONENT	ESA PROGRAM	LIHEAP	CDWX PILOT	Rationale for Pilot Policy Decision
				offeror. Secondarily, shared measures were divided based upon potential installation costs.
Measure Loading Order	Not applicable.	Health and safety measures are first priority. Subsequent measures are classified as "mandatory" or "optional." All feasible mandatory measures must be installed before optional measures are considered.	Measures will be installed as prescribed by AMI data analytics. A measure will be installed either as an ESA Program measure, a LIHEAP measure, or a CDWx Pilot measure.	This approach was part of the alternative weatherization process that was designed for and tested by the CDWx Pilot.
Customer Education (for Measures Installed)	Mandatory customer education regarding maintenance and warranty of installed measures is performed by the installation crew.	Mandatory customer education regarding use, maintenance, and warranty of installed measures is performed by the installation crew.	Mandatory site-specific customer education regarding use, maintenance, and warranty of installed measures is provided by the installation crew.	No change to existing policy was adopted.
Quality Assurance (QA) Process and Inspections	The utility or its inspection contractors inspect all attic insulation and furnace replacement measures. All other jobs not involving these targeted measures are subject to randomized inspections per the Statewide Policy and Procedure Manual. Minimum sample size is determined based on the contractor's previous pass rates and the	Providers shall inspect 100% of weatherized dwellings, and a minimum of 5% of homes are subject to an additional CSD or third-party contractor quality assurance (QA) Inspection.	The QA policies of each (PG&E ESA Program and CSD LIHEAP) were adopted. Inspection polices will be followed based on the program paying for the installed measure, and inspections will be conducted by Facilitator staff.	In order to expedite inspections and create the least disturbance to occupants, a single QA inspection visit was adopted for the Pilot to encompass both inspections.

POLICY COMPONENT	ESA PROGRAM	LIHEAP	CDWX PILOT	Rationale for Pilot Policy Decision
	total number of units completed.			
Program Documentation	Paper forms or the tablet equivalent provided by the utility. All work is input into PG&E's data system for reporting and billing.	CSD-created forms are used, or approved contractor equivalents when allowed. All work must be documented and billed in CSD's billing database.	Measures and activities (assessment, diagnostic, etc.) will be billed based on predefined measure divisions to: • LIHEAP, • ESA Program, or • PG&E for CDWx measures. Duplicative paperwork will be minimized by utilizing the tablet-based processes to streamline data collection and documentation.	As both the ESA Program and LIHEAP are governed by external regulations, documentation could not be changed substantially. However, to the extent possible, electronic forms were created to minimize duplication.
Billing	Contractors enter measures into the PG&E data system and the ESA Program administrator verifies projects for payment.	Providers enter measure information into the Weatherization Database or EARS Reporting Database. CSD reimburses the Provider.	Providers will follow existing billing procedures for ESA Program and LIHEAP measures. CDWx Pilot measures (which fall outside of the current ESA or CSD programs) are entered into the CDWx database at the time of installation via the CDWx Work Order. The Pilot database will create an invoice for the Dual Providers showing all CDWx measure installations. The invoice must pass QA verification and be approved in the database for payment.	There was no change to the existing billing policies for the ESA Program and LIHEAP. However, CDWx measures were billed separately to PG&E and were not tracked through the standard ESA Program data system. This is because there is no existing mechanism to track these new measures.

3.6 ALTERNATIVE WEATHERIZATION PROCESS

After aligning program policies, the next step of Phase I Planning and Design was to develop an alternative weatherization process for identifying, enrolling, and serving HEU households. For an average PG&E ESA Program or CSD LIHEAP household, prescriptive weatherization methods adequately addressed the majority of the energy efficiency opportunities; however, households with abnormally high bills were identified as potentially benefitting from the enhancement provided by the alternative weatherization process.

This process would incorporate the use of AMI data analysis in the identification of measures from within and outside of the ESA Program and LIHEAP, resulting in a customized suite of measures for each home based on actual energy use data.

A seven-step alternative weatherization process was developed and approved by the Stakeholder Work Group. These steps are summarized in **Figure 4**, and additional details are provided in the sub-sections below.

Figure 4: CDWx Pilot Processes

3.6.1 STEP 1: AMI Data Analysis and Targeting

To ensure that adequate AMI data would be available to complete the analytics process, collaboration between PG&E and the Pilot Facilitator was required. Using PG&E's data request format, specific data points would be solicited that would result in reports and be run through the Facilitator's data algorithms to eliminate homes that would not benefit from intervention.

The output of the AMI data analysis would be a targeted customer list of high usage households located in Butte, Shasta, Tehama, and Fresno counties. A description of the AMI analysis implementation is included in Section 4.1.

3.6.2 STEP 2: Customer Outreach

The CDWx Pilot would be made available to renters and homeowners and would target CARE-qualified, single-family households in which energy consumption patterns indicated high-intensity end use. Using a coordinated approach to outreach, customer service representatives (CSRs) in the Facilitator's call center would conduct an initial phone outreach effort to:

- Ensure consistent messaging.
- Manage household expectations regarding the

opportunity presented by the Pilot.

- Explain the one-stop service model for enhanced opportunities to counteract the high energy usage.
- Outline the CDWx Pilot steps to the customer.
- Confirm mail-out of the Property Owner Authorization (POA) to the customer/property owner.

The CSRs would also pre-qualify each household during the outreach call. Households would be pre-qualified by income survey (by customers providing their estimated household income). This information would be noted and managed in PG&E's ESA Program data system for use during the enrollment process. Following this introduction to the Pilot, if the customer expressed interest in participating, the customer would be transferred to a Dual Provider via "warm" transfer, which would lead to the scheduling of an on-site visit.

3.6.3 STEP 3: On-Site Enrollment

At the start of the on-site visit, the Dual Provider's ESA Program Energy Specialist/LIHEAP Assessor (ES/Assessor) would confirm the eligibility of the customer and collect income documentation, complete the enrollment paperwork, and secure a signed POA. Enrollment data would be entered directly into the CDWx Enrollment Form (**Attachment C**), allowing households to be simultaneously enrolled in the ESA Program, LIHEAP, and the CDWx Pilot. Once the form was submitted, the tablet-based information would populate both the ESA Program and LIHEAP standard enrollment forms.

3.6.4 STEP 4: On-Site Assessment

During the on-site visit, the ES/Assessor would conduct a dwelling assessment and measure feasibility assessment. The assessment results would be captured directly in the CDWx Assessment Form and transmitted into the CDWx Pilot database to improve the efficiency and simplicity of the data collection process.

While conducting the on-site assessment and later during measure installation, if the ES/Assessor or any installation personnel found that a dwelling would require combustion appliance repair and replacement (R&R) work for an ESA Program-assigned measure, the household would no longer be allowed to participate in the CDWx Pilot. After removal from the CDWx Pilot, the household would be re-routed into the standard ESA Program path for the appliance R&R work as well as other measure installation. This was intended to prevent undue delays in processing through outside contractors. If the jobs were removed from the Pilot, they would no longer to be tracked within the CDWx Pilot scope.

3.6.5 STEP 5: On-Site Customer Education

In the next step of the on-site visit, the ES/Assessor would provide one-on-one, site-specific customer energy education using a CDWx Pilot database-generated report based on the household's usage data. The ES/Assessor would use the report to discuss the following with the customer:

- Electric (kWh) and gas (therm) consumption for the household over the previous 12 months.

- Breakdown of energy use based on energy usage type: electric baseload energy, cooling energy, gas baseload energy, and heating energy.
- Percent of all energy usage by energy usage type.

To conclude, the ES/Assessor would answer any questions the customer might have regarding the household's energy use. An example of the CDWx energy education materials is included in **Attachment D**.

3.6.6 STEP 6: Installation of Measures

Following the on-site visit, the Dual Provider's installation staff would install all ESA Program, LIHEAP, and CDWx measures validated during the assessment.

For each measure to be installed, the installation standards of the ESA Program, LIHEAP, or CDWx measures would be applied. The source of the standard would depend on whether PG&E, CSD, or the Pilot funded the measure. For example:

- If a Provider installed a PG&E LED A-lamp, the measure would be installed in accordance with the PG&E Installation Standards (IS) Manual.
- If a ceiling fan was installed, it would be installed in accordance with the CSD Weatherization Installation Standards (WIS).
- If a smart thermostat was installed, it would comply with the CDWx Quick Reference Standards (QRS), which were newly developed specifically for the CDWx Pilot (**Attachment E**).

At the conclusion of the measure installation visit, the Provider's installation crew would confirm all installed measures on the CDWx Work Order and obtain a customer signature.

3.6.7 STEP 7: Reporting and Invoicing

To simplify the procedures for this step, the Facilitator modified electronic tablet and database tools to ease reporting and billing functions for the CDWx Pilot. **Figure 5** on the next page provides a visual overview of the data processing flow, starting with the delivery of household information obtained through AMI data and provided to outreach personnel for initial contact, then to the Dual Provider and its field personnel. All on-site data would be transmitted via electronic tablets, CDWx Pilot forms, and the CDWx Pilot database.

Reporting Forms

During the alternative weatherization process, if a customer were scheduled for an on-site visit, the electronic CDWx Enrollment and Assessment forms would be pre-populated with known customer information and sent to the Dual Provider.

During the Phase I planning efforts, the four ESA Program and LIHEAP forms below were combined to create the CDWx Enrollment and Assessment Form:

CSD 43 Energy Intake Form
Used to document a household's eligibility for LIHEAP payment and/or weatherization services.

PG&E Income Verification and Customer Information (HAF Packet, 1 of 3)

Used to determine if a household meets the income eligibility requirements for PG&E's ESA Program.

PG&E Home Assessment Form (HAF Packet, 2 of 3)

Used to gather dwelling characteristics and note potential measures for installation.

PG&E Refrigerator and Air Conditioner Application (HAF Packet, 3 of 3)

An application for the household to receive an energy efficient replacement refrigerator and/or window/wall air conditioner.

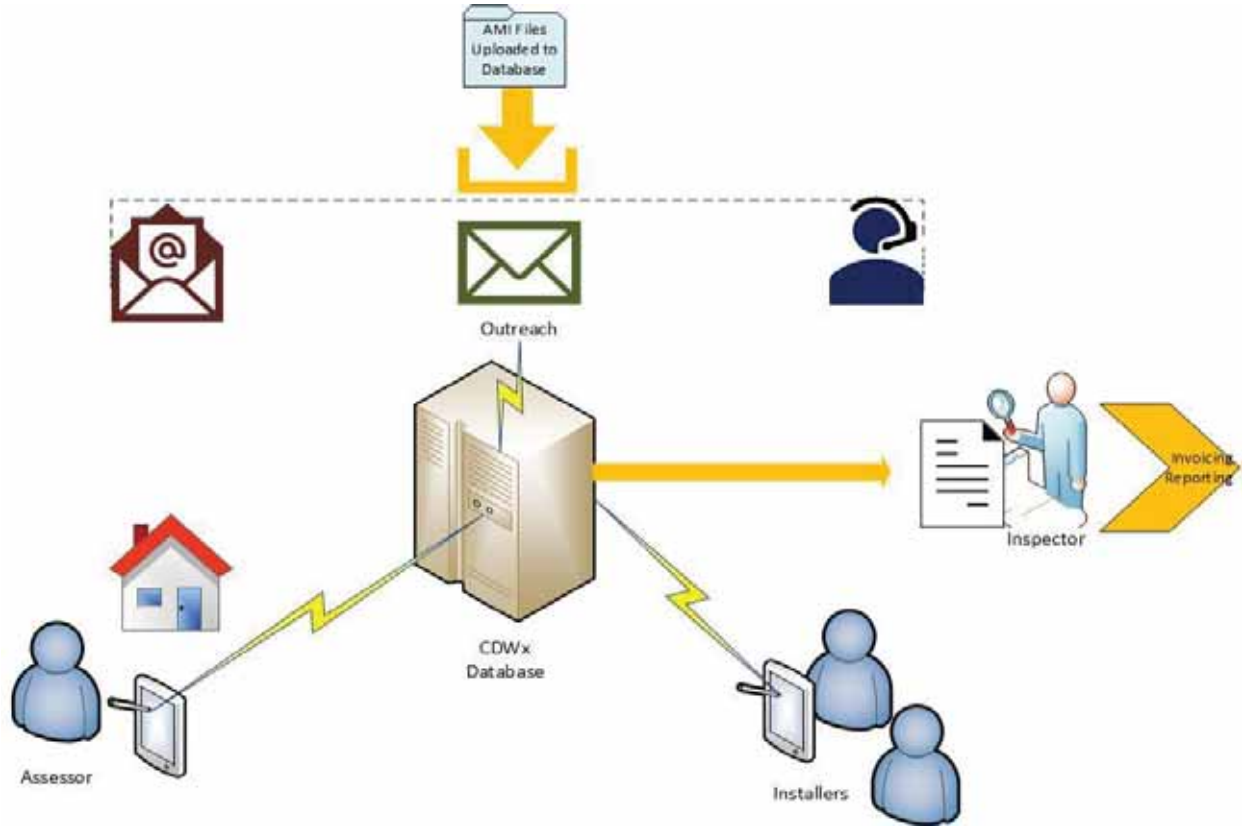

Figure 5: Overview of Customer Information Flow Using CDWx Pilot Forms, Tablets, and Database

The ES/Assessor would complete the CDWx Enrollment and Assessment Form during the on-site visit and would submit the information via electronic tablet to the CDWx database. In addition, the ES/Assessor would evaluate each prescribed measure using the assigned feasibility criteria and submit the findings to the CDWx database. This transfer would expedite the assessment process for the Provider, the customer (who would only need to submit required documentation once), and reduce errors from the field. Once submitted, the data would automatically populate the PG&E and CSD forms detailed above.

From the feasible measure information collected on the CDWx Assessment Form and submitted to the CDWx database, the CDWx Work Order would be created. The CDWx Work Order would inform installation personnel of the measures to be installed and identify which

measure installation standards would be applied.

Once measure installation was completed, the installers would use the same electronic form to note on the CDWx Work Order which measures were actually installed and submit the confirmation back to the CDWx database. The Work Order then would be presented to the customer for signature, which would be obtained on the tablet or paper copy and require the customer's acknowledgement of the quantities installed. A copy of this form would either be emailed to, or left with, the customer. Additional policies for the CDWx Work Order are provided in Section 4.5.

CDWx Reporting and Invoicing Database

The data collection process would be streamlined from the data analysis through outreach, and from assessment through installation, using a central CDWx Pilot database. Pilot personnel at each step in the process would be able to enter their data directly into the CDWx database system. At each step in the reporting and billing process, data could be examined by the Facilitator in order to provide reporting and billing assistance, as needed, in real time. ES/Assessors and Provider administrative staff would enter all service details using a web-enabled device and would be able to query the database as needed. Database reports would be available for output in several user-friendly formats such as Excel, PDF, or text file. The front-end view of the CDWx Pilot database is shown in **Figure 6**.

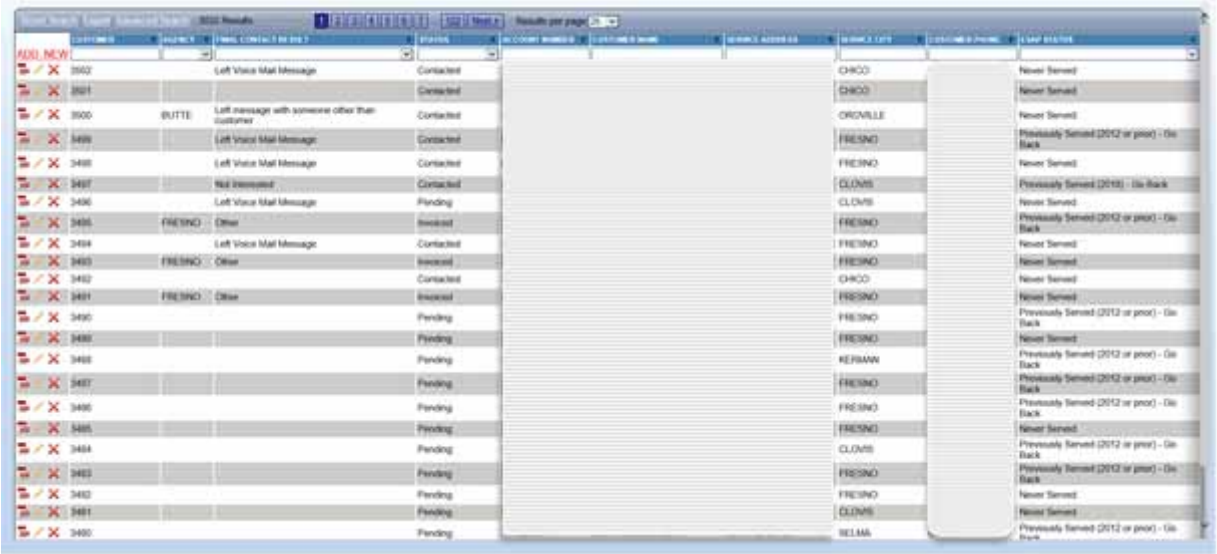

Figure 6: CDWx Database Screenshot (Redacted for Data Security)

Invoicing

Program-specific information would be shared and stored in both PG&E's ESA Program data system and CSD's expenditure database and would allow the Providers to bill the measures to these systems in accordance with PG&E and CSD protocols. CDWx measures would be billed directly from the CDWx Pilot database. All electronic forms could be downloaded from the database, and paper copies could be printed for verification of reports and invoices.

Measures submitted to PG&E's data system would be processed in compliance with PG&E's billing protocol.

Furthermore, in accordance with CSD regulations, an invoice would not be processed until a dwelling's post-inspection was complete. During the CDWx Pilot, this policy would also be applied to the CDWx measures to ensure that measure quality was verified before payment was issued.

3.7 IDENTIFICATION OF PILOT MEASURES

CPUC Modified Decision 17-12-009[7] authorized the weatherization pilot "…to selectively offer additional weatherization measures that fall outside current ESA Program guidelines for high-usage, high-potential customers identified via AMI analysis." When applying this objective to the CDWx Pilot, alternative methods of measure identification were considered. The Core Team collected and reviewed examples of ways that AMI data could be used to identify measures for energy efficiency programs, several of which are described below:

- AMI data could help identify households with high air conditioning loads. A variety of factors can cause high air conditioning loads, including: poor shell insulation, high infiltration, equipment in need of repair, or improper use of cooling equipment. Similar factors could be identified for customers with high heating bills.
- AMI data might reveal households with high electric or natural gas baseload usage as candidates for appliance and plug load specific measures. These households might have multiple refrigerators or leave lights/small appliances on when not in use. Behavioral modifications or removal of an extra appliance would provide significant savings in these instances.
- AMI data also could be used to validate the end-use inefficiencies that cannot be corrected. High bill households also might experience high recurring loads from usage that weatherization offerings cannot address, such as grow lights or other residential, medical, or home business equipment.

These examples were used to determine the types of new measures that could be added to the CDWx Pilot Program. Ultimately, after defining the Usage Profile Buckets, the Core Team identified underrepresented measure areas and identified potential CDWx measures that would provide balance to all usage areas discussed in Section 3.7.1.

3.7.1 CDWx New Measures

Eleven new measures (referred to as "CDWx measures") were not a part of either the standard ESA Program or LIHEAP offerings at the time of the Pilot. The CDWx measures are described in **Table 5** on the following page.

[7] CPUC Decision 17-12-009, page 392

Table 5: CDWx Measures and Benefits

CDWx MEASURE	MEASURE BENEFIT
Attic Sealing (Stand-alone)	Penetrations or gaps in the attic thermal boundary are sealed to reduce the transfer of heated or cooled air escaping from conditioned to unconditioned space.
Attic Sealing with Ceiling Insulation	This measure expands beyond attic sealing to add ceiling insulation as a barrier between the conditioned space of the home and unconditioned space in the attic. The presence of insulation results in conditioned space staying cooler or warmer for longer periods of time. Increased insulation paired with attic sealing results in less energy being used to heat and cool the home.
Blower Motor Retrofit	In a central forced air system, the blower motor powers the fan that moves air though the ducts. Upgrading an inefficient blower motor with a new, high-efficiency blower motor reduces the amount of electricity required to circulate air through the ducts and into the living space.
ENERGY STAR® Clothes Dryer	ENERGY STAR clothes dryers use less energy than conventional dryers by using moisture sensors or low heat settings. Moisture sensors detect when clothes are dry and automatically shut off the dryer instead of running a full cycle.
Enhanced Time Delay Relay	An enhanced time delay relay controls the blower motor fan in a central forced air system by calculating the optimal delay time during each air conditioner compressor cycle, providing additional cooling to the home.
LED Security Light	LED lighting consumes less power and has a much longer lifespan than compact fluorescent lamps (CFL), high-pressure sodium lamps, or traditional incandescent lights, while emitting more light. Unlike traditional exterior lights that are manually controlled by a switch and emit light constantly, LED security lights equipped with motion sensors and photocell controls are only activated in the presence of movement and automatically shut off during the day.
Prescriptive Duct Sealing	Central HVAC systems are made up of a network of ducts delivering heated or cooled air throughout the house. Ducts may have leaks and holes due to age or improper installation. This results in longer run-time to maintain a desired temperature in the home. Prescriptive duct sealing consists of visual inspection to identify sources of existing duct leakage and repair/sealing as needed.

CDWx MEASURE	MEASURE BENEFIT
Refrigerant Charge	Air conditioning units require the correct amount of refrigerant (gas) in order to run efficiently. If there is not enough refrigerant, the system will run longer while attempting to cool the home. If there is too much refrigerant, the system will cycle on and off more frequently. By testing the refrigerant level and making any necessary charge adjustments, a home's cooling system can be made to perform more efficiently.
Smart Thermostat	Smart thermostats control the home's heating and air-conditioning system to maintain the temperature of a room or space. Smart thermostats are enhanced by data gathering and analytics functionalities, enabling them to use a variety of methods to optimize HVAC settings. The thermostat will automatically adjust the temperature when the occupant is leaving the home or going to bed and maintain a set temperature only when necessary. It can also be controlled from an external device (e.g. smart phone) via Wi-Fi.
Thermostatic Tub Spout	A thermostatic tub spout saves water by automatically diverting water flow to a valve-controlled showerhead when the water reaches the desired temperature. When the customer is ready to shower, manually opening the shower valve restarts the water flow. When a bath is preferred, the tub spout lever is manually reopened, allowing the hot water to flow into the tub. Thermostatic tub spouts save both water heating energy and water when the shower is turned on and left unattended.
Variable-Speed Pool Pump	Variable-speed pool pumps offer an energy efficient alternative to single-speed and two-speed pool pumps. Unlike a single-speed pump, which runs at one speed, a variable-speed pump allows a user to change the pump settings, reducing energy use at times when full capacity is not essential.

3.7.2 Prescription of Pilot Measures

Based on the AMI data analysis of household energy consumption, each household would be assigned to User Profile Buckets. Each dwelling could have as few as one qualifying User Profile Bucket or as many as six, as shown in **Figure 7**. It was anticipated that most HEU customers would fit into more than one User Profile Bucket.

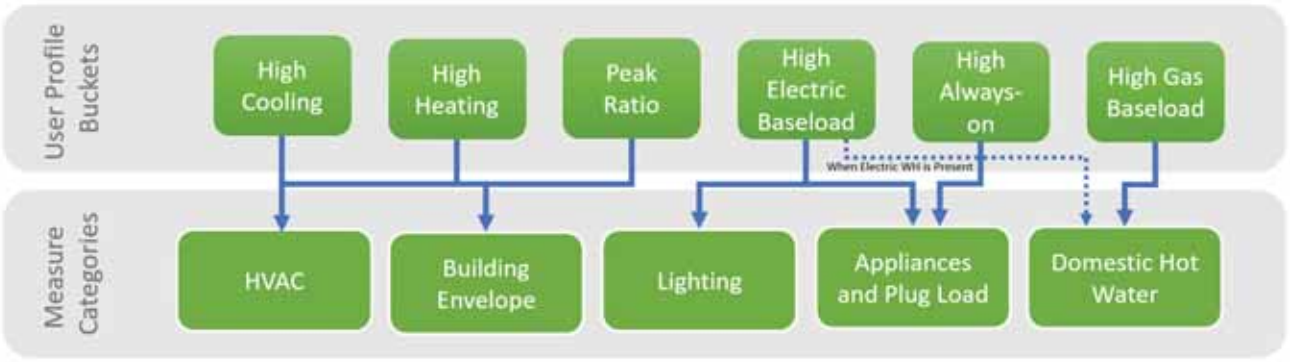

Figure 7: User Profile Buckets and Measure Categories

User Profile Buckets would be linked to measure categories that contained a number of measures relative to that category. For example, a dwelling that was found through AMI data analysis to have high cooling usage would be assigned to the HVAC (heating, ventilation, and air conditioning) and building envelope measure categories. Measures included in the building envelope category are those that reduce heat transfer through the building envelope primarily caused by infiltrationas well as conduction, convection, or radiation. A complete illustration of measure categories and their associated measures is provided in **Figure 8** on the following page.

To simplify interpretation of the graphic on the following page, measures assigned to LIHEAP are color-coded in orange; the ESA Program measures are in blue; and the CDWX measures are in white. The footnote in **Figure 8** is provided to identify those measures that were ascribed to LIHEAP during the Pilot, but which are also a measure in the ESA Program.

At the time of the CDWx Pilot planning and design, pool pumps and precriptive duct sealing were ESA Program measures, but only for other IOUs. In addition, several other measures were under evaluation for the 2017-2020 applications, including thermostatic tub spouts, smart thermostats, blower motor retrofits, and enhanced time delay relays. All of these measures were added to the Pilot and classified as CDWx measures.

In addition to the requirement to qualify for at least one User Profile Bucket, the Core Team defined the minimum dwelling eligibility for the Pilot as a home that would meet the minimum criterion for at least one feasible ESA Program measure and one feasible LIHEAP measure. This would be confirmed by the ES/Assessor during the on-site visit through verification of measure feasibility criteria.

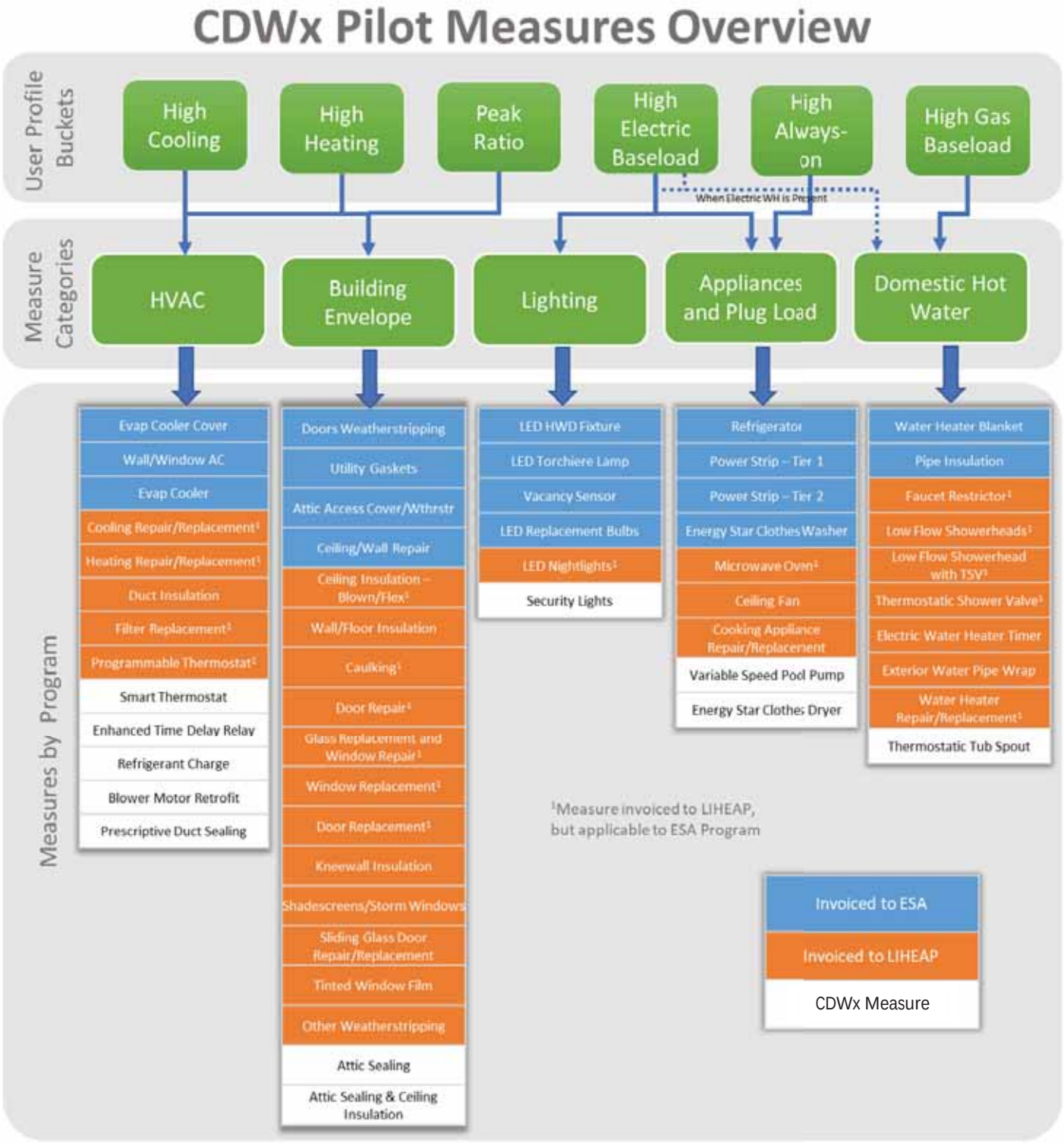

Figure 8: Pilot Measures by Program, as Adopted in 2016

By Pilot design, measures and their costs would be designated to either CSD, PG&E, or the CDWx Pilot. Measures would be billed separately by the Providers to the existing ESA Program or to LIHEAP data collection systems. CDWx measures would also be billed to PG&E; however, for the Pilot they would be addressed under separate invoice after manual processing by the Facilitator, which was required since there was no automated mechanism for these measures within the existing ESA Program.

Installation of measures during the CDWx Pilot would be limited to those measures within the identified buckets. This would contrast with how LIHEAP and the ESA Program currently operate, with Providers being directed to install all feasible measures.

The decision by the Core Team to not install all feasible measures during the CDWx Pilot was extremely important. The Pilot tested the alternative weatherization process in contrast to the standardized approach for all weatherization customers. By design, the alternate process would incorporate new targeted measures for HEU households in addition to existing measures that aligned with the household's high usage area(s).

This alternative concept was intended to maximize energy savings potential for HEUs through individualized, usage-based application.

3.8 Quality Assurance Plan

QA in the CDWx Pilot was planned to consist of a systematic effort to ensure that the Pilot's design satisfied the CPUC directives and would meet PG&E/CSD expectations. The QA plan would be an integral part of the Pilot's success because it would clearly define the policies and guidance needed to manage the tasks below:

- *Stakeholder expectations:* By convening all stakeholders as part of the decision-making process, all parties were able to contribute to the Pilot design, ask questions before, during, and after implementation, and provide feedback about the Pilot.
- *AMI data analytics:* A methodology was created and followed to ensure complete data sets were provided and applied through the household and measure identification process.
- *Procedures for household enrollment and the alternative dwelling assessment:* Trainings for Customer Service Representatives and Providers were provided. Call scripts and customer education templates were developed.
- *Data collection:* Outreach tracking sheets and the CDWx Pilot database were utilized.
- *Measure installation quality:* The ESA Program IS, CDWx QRS, and LIHEAP WIS were in effect for the Pilot, which established a framework for measure installation quality.
- *Post-inspection expectations:* Jobs were inspected by the Facilitator's inspectors using a standardized inspection form, and feedback was provided to Providers for correction of all installation issues.

This defined QA framework and the following support documents would be applied to the CDWx Pilot during its implementation phase. To ensure accessibility and accountability, the QA documents in this section were distributed to the Providers during individualized training sessions, and the Facilitator reviewed their contents directly with the Providers.

3.8.1 Pilot Measure Installation Standards

The CDWx Pilot utilized uniform, clearly written installation standards (existing for the ESA Program and LIHEAP, and specially developed for the CDWx measures) for the Providers' installers and administrative staff and the Facilitator's post-inspectors. Each section contained the specifications for product selection, feasibility, and criteria for proper installation of installed measures. Use of these standards would ensure that quality measure installation practices were consistent.

3.8.2 Dual Provider Training

Due to the adjustment of the regular ESA Program and LIHEAP weatherization policies for the CDWx Pilot and the addition of electronic forms and database, it was determined that training for the Dual Providers would be necessary. This training would be made available to the Dual Providers at the start of the Phase II implementation and on an ongoing basis as requested. The training would not review gas appliance test procedures (NGAT and CAS) in addition to the feasibility criteria or installation requirements for measures that already existed in LIHEAP and the ESA Program.

Training and support materials would focus on Pilot-specific components, including:

- Review of the dual enrollment criteria.
- Review of the Pilot assessment protocol.
- Use of the electronic data collection forms.
- Pilot-specific energy education requirements.
- Explanation of the PG&E and CSD measure leveraging, and how the measures would be divided relative to feasibility criteria and billing.
- "New" Pilot measures, including feasibility and installation criteria.
- Post-inspection and QA/QC policies.
- Invoicing and reporting requirements.

Each Dual Provider would be provided its own training day so that individualized instruction could be made available.

3.8.3 Consumption-Driven Weatherization (Wx) Pilot Training Resource and Training Manual

The Pilot's *Consumption-Driven Weatherization (Wx) Pilot Training Resource and Training Manual*, provided in **Attachment A**, was the primary QA resource manual for Dual Providers throughout Phases I and II. The manual defined Pilot policies, provided step-by-step guidance, and outlined specific installation and document collection procedures. In addition, the training materials mirrored the format of the CDWx database and electronic forms to further support correct usage of these resources.

3.8.4 Post-Inspection Tools

QA inspections were conducted by the Facilitator's trained field staff as part of the CDWx Pilot to ensure quality installations, verify installed measures were completed, confirm proper measure operation, and forward any questions the household had about the program to the Dual Provider. The QA inspectors were required to follow the steps outlined below:

- Schedule an inspection following the assessment and installation appointment(s).
- Conduct inspections in accordance with the PG&E ESA Program, CSD LIHEAP, or CDWx Pilot installation standards for all installed measures.
- Provide feedback to the Dual Providers for the resolution of any measure fails.
- Note any questions from the household on the inspection form and forward the question(s) to the Dual Provider.
- Provide follow-up to written documentation with a phone call or email to ensure the customer's question was clear.
- Document the outcome of the on-site inspection and provide the findings to the Facilitator for distribution to the Dual Provider.

At their discretion, the PG&E Central Inspection Program or CSD Quality Assurance Division could select the CDWx Pilot dwellings for additional inspection. For ESA Program and LIHEAP measures that were re-inspected by these entities, data results were tracked in the program-specific data systems.

4. PHASE II PILOT IMPLEMENTATION

In order to meet the CDWx Pilot objectives described in CPUC Decision 16-11-022 and Modified Decision 17-12-009, AMI data analysis was applied first to target HEU households and then to identify the measure suites that would result in reduced energy usage. The Phase II implementation narrative follows the chronology of a customer's experience and focuses on events that occurred during each step of the Pilot.

4.1 AMI Analysis Methodology for Household Identification

To support the application of AMI data in the Pilot implementation, a clearly defined methodology was developed to determine 1) what data points would be needed, 2) how the data would be solicited and transmitted, 3) the minimum requirements for what would comprise a complete dataset, and 4) the timelines for transmittal of data requests.

4.1.1 AMI Data Request

The initial data request submitted to PG&E focused on single-family, CARE-qualified households that: 1) exceeded 400% of baseline usage, 2) had never been served in the ESA Program, 3) had both gas and electric accounts, and 4) were located in the targeted areas of Shasta, Tehama, Butte, and Fresno counties.

The data request included the following data points:

- Customer account ID, premise ID, and service account ID
- Customer name
- Customer address (to include zip code plus four)
- Customer phone number
- Customer email
- Indication of customer participation in other PG&E programs or rebates
- 18 months of hourly electric usage data
- 18 months of daily natural gas usage data

This request returned only 132 households meeting the criteria—too few to meet program enrollment goals—and was deemed too restrictive. A follow-up data request was submitted that relaxed some of the initial qualifations. The changes included:

- Inclusion of customers previously served by the ESA Program
- A revised HEU definition that included 90th percentile HEUs (≥360% of baseline)[8].

Review of the second dataset identified abnormal results outside of the expected value ranges. Collaborative review between PG&E and the Facilitator identified and corrected a processing issue.

Finally, a third AMI dataset was requested and received that consisted of four files: electric

[8] Based on the Modified Decision 17-12-009, which adopted household monitoring by the investor-owned utilities of households at the 90th percentile of electric baseline usage.

customer data, natural gas customer data, natural gas daily usage, and electric hourly usage. These files contained the required data to complete the household identification process.

4.1.2 Pre-Data Quality Check

In order to ensure that a complete dataset (consisting of all data points in item 4.1.1) for each household was available, several methods of detecting and correcting corrupt or incomplete records were employed. Inconsistencies that may have been the result of user entry error, data corruption in transmission or storage, or duplicate entries created by different data dictionary definitions were detected or removed. Once all data was determined to be valid, the data analysis began.

4.1.3 Pre-Data Analysis

During this stage, electric hourly usage data (measured in kilowatt hours or kWh) and daily natural gas usage data (measured in therms) were rolled up into a per-month usage by household. This allowed the data analysis team to avoid the irregularities created by incomplete months of data or different customer billing cycles and to create the initial list of households to be targeted by the Pilot.

4.2 Targeting Analysis Inputs for Measure Identification

Using the same dataset, further data analysis was conducted to identify the specific high usage areas experienced by each of these households, and resulting in a prescriptive suite of relevant ESA Program measures, LIHEAP measures, and measures outside of the existing programs. The prescription of these optimized measures was expected to most effectively reduce household usage.

Data inputs shown in **Table 6** were added to the AMI analysis to predict how efficiently each home was using energy to heat and cool the living space. This allowed variable characteristics to be isolated and separated from the usage profile. Examples of these variables were:

- Structural factors, e.g., the size of the dwelling, location, existing fuel types, etc.
- Occupant-dependent factors related to usage, such as the number of occupants living in the home, the number of appliances and peripheral devices, etc.
- Inefficiency factors related to the age and condition of the home and its systems

Normalizing the data in this way made it possible to identify potential measure interventions that could be accomplished through installation of energy efficiency upgrades. Following this step in the AMI analytics methodology, regional weather data[9] was added to the data analysis model. Monthly HDD and CDD, taken at base 65°F and base 70°F respectively (as identified by industry best practices), were compiled for the specific targeted regions (i.e., Shasta, Tehama, Butte, and Fresno counties).

HDDs were calculated by taking the average temperature on any given day and subtracting it from the base temperature ($Temp_{HDD\_BASE} - Temp_{AVERAGE} = HDD$). If the HDD value was less than or equal to zero, that day had zero HDD; however, if the value was positive, that

[9] www.DegreeDays.net

number represented the number of HDD on that day.

CDDs were calculated by taking the average temperature on any given day and subtracting the base temperature ($Temp_{AVERAGE} - Temp_{CDD\_BASE} = CDD$). If the CDD value was less than or equal to zero, that day had zero CDD; however, if the value was positive, that number represented the number of CDD on that day.

Table 6: Analysis Inputs

DATA POINT	UNIT
Conditioned floor area of home	sq. ft.
Electric usage	kWh
Gas usage	Therms
Heating Degree Days	HDD, base 65°F
Cooling Degree Days	CDD, base 70°F

4.2.1 Targeting Analysis Outputs

The next stage of analysis provided the outputs (see **Table 7**) required to ensure that "like" data was compared for all dwellings. These outputs supported multiple points of analysis to safeguard accuracy. Data output definitions are included in the "Table 1: Table of Common Acronyms and Terminology" on pages iii—iv of this report.

Table 7: Data Analysis Outputs

DATA POINT	UNIT
Always-On	kW
Annual Electric Baseload	kWh
Annual Gas Baseload	Therms
Electric and Gas Weather Correlation	R^2 electric/natural gas
Home Cooling Energy Use Index	BTU/CDD/sq. ft.
Home Heating Energy Use Index	BTU/HDD/sq. ft.
Peak Ratio	Unitless
Seasonal Cooling Load	kWh
Seasonal Heating Load	Therms

4.2.2 Electric and Gas Weather Correlation

As a method of testing the validity of the outputs, a correlation value between the weather data and energy consumption was computed for both heating and cooling energy usage. CDDs plotted by month over one year (represented by the orange line) and a sample household's actual electric usage (represented by the blue line) are shown in **Figure 9**.

By reviewing these together, it was possible to see that the household usage curve tracks with CDDs, which confirms that the data is good.

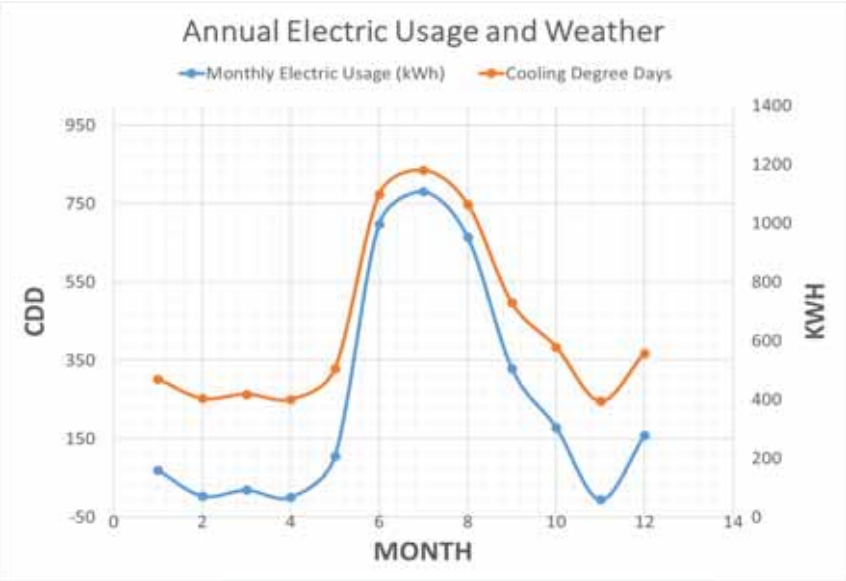

Figure 9: Electric Usage and Weather

Next, the data was examined to determine how closely the energy usage correlated with CDDs. A linear curve fit for electric usage based on CDDs results in a correlation coefficient squared (R^2) value. A high R^2 value (closest to 1.0) indicates a strong correlation between temperature and energy consumption, whereas a value of zero would indicate no correlation at all between the cooling load and the weather.

In the example provided in **Figure 10**, the R^2 value is 0.915, indicating that this household utilizes HVAC (cooling) during times when cooling is needed. Similar analysis was executed for a household's heating energy usage compared to HDDs.

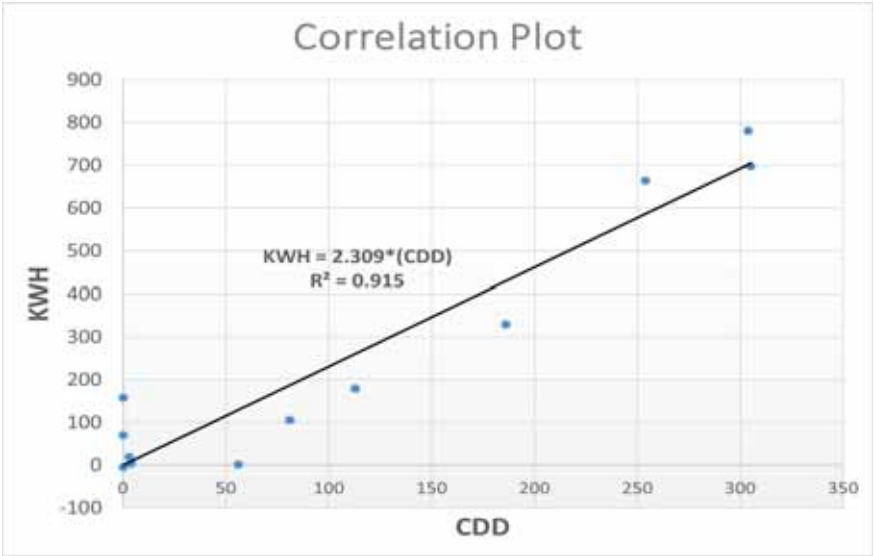

Figure 10: Electric Usage with Weather Correlation

4.2.3 High Use Type and Inclusion Criteria

Lastly, six categories of high consumption ("flags") were identified in the data analysis, as listed in **Table 8**. These flags were used to indicate whether a home met the minimum requirements for the high usage buckets, as described in Section 3.7.2**.**

If a household met or exceeded any one or more of the flags listed in **Table 8**, then the household was deemed eligible for the Pilot. The flag names directly correlated to the User Profile Bucket names.

Table 8: Flag Types and Inclusion Criteria

FLAG	INCLUSION CRITERIA
High Cooling	> 4 BTU/CDD/sq. ft.
High Heating	> 6 BTU/HDD/sq. ft.
High Peak Ratio	> 2.5
High Electric Baseload	> 4000 kWh
High Always-on	> 0.40 kW
High Gas Baseload	> 100 therms

In the initial data analysis, the inclusion criteria were set as identified in **Table 8**. However, the high cooling and high heating flags were modified in the first quarter of Pilot implementation (as shown below) to identify additional HEUs and increase the pool of eligible households:

- High Cooling > 3 BTU/CDD/sq. ft.
- High Heating > 5 BTU/HDD/sq. ft.

Once these adjustments were made, the methodology was updated and an additional HEU customer list was generated for outreach and enrollment personnel.

4.3 Customer Outreach

Outreach was conducted by the Facilitator's Call Center staff. Initially, CSRs were instructed to make three attempts to contact the customer by phone. After approximately 30% of calls were made with a low success rate, the process was adjusted. The outbound calling campaign continued; however, for those customers with an email address on record, an introductory email was sent to introduce the Pilot. For those customers without an email, letters were sent through the postal service. As a third method of contact, Dual Providers were requested to make three additional attempts to enroll the customer, either by phone or via a cold call (visit) to the residence.

As households were contacted, notes regarding phone calls and messages were entered into the CDWx Pilot database and PG&E's ESA Program data system as appropriate. The Dual Providers

and Facilitator's CSRs were able to monitor the contact history of targeted households to reduce duplication of effort and ensure that transferred households were appropriately connected.

Once successful contact was made with a household, the Dual Provider was asked to schedule the on-site visit and installation appointments with the customer. The on-site visit consisted of customer enrollment, dwelling and measure assessment, targeted customer education, installation of basic measures, and confirmation of the ensuing installation visit.

4.4 DATA COLLECTION

The tablet-based assessment form, pre-populated with customer information stored in the CDWx Pilot database, was utilized for the customer enrollment and home assessment processes. Submittal of the electronic assessment form updated all information stored within the customer's profile in the database and automatically populated the CSD 43 Energy Intake Form and ESA Program Home Assessment Form Packet. The single-entry enrollment and combined home assessment processes allowed common information to be entered in an electronic form that populated some required LIHEAP and ESA Program forms.

During these processes, electronic test forms were dispatched, completed, and submitted to ensure the proper generation of the ESA Program and LIHEAP documents. The tablet-based electronic forms were developed by the Facilitator using the FastField® Forms mobile application to ensure secure communication between the tablet and the CDWx Pilot database.

Data fields from the ESA Program HAF and the CSD 43 Energy Intake form were mirrored within both the CDWx Pilot database and the tablet-based CDWx Assessment Form to facilitate the transfer of data. Extensive testing was conducted to ensure that all data points collected during the home assessment correctly transferred to, and were stored by, the database. Further testing was performed to ensure that all customer information was retained and transferred when an electronic form was dispatched and submitted between the tablet and the CDWx database.

4.5 ON-SITE VISIT (ENROLLMENT, ASSESSMENT, ENERGY EDUCATION)

Each on-site visit was conducted by a Dual Provider's experienced ES/Assessor. To facilitate the completion of the on-site visit, all Dual Providers were given the AMI data analysis results and measure category prescriptions for a home based on the actual energy consumption of the household. Each home participating in the Pilot was required to have at least one ESA Program measure and one LIHEAP measure installed. In addition, the household could be identified as having qualifying measures from as few as one, or as many as six, measure categories. The CDWx alternative assessment process required Dual Providers to evaluate each measure from all feasible measure categories to determine if the data analysis was correct in the measure prescriptions.

4.5.1 Enrollment/Income Eligibility

Application of the LIHEAP income eligibility requirement was straightforward, and PG&E's categorical acceptance of households that met this income level greatly simplified the application process.

4.5.2 Energy Education

Energy education was implemented as originally intended in the Planning and Design phase. No additional adjustments were necessary for content or delivery.

4.5.3 Dwelling Assessment and Measure Identification

Dwelling and measure assessment consisted of visual verification of feasible measures compared to the prescribed list of measures based on the AMI data analysis. Measures were approved or removed based on measure feasibility criteria as defined in the IS for the ESA Program, the CSD WIS for LIHEAP, the QRS for the CDWx measures, and verified during the on-site visual assessment. Samples of the tablet forms are provided in **Attachment C**. For the purposes of the CDWx Pilot, a completed customer assessment appointment resulted in an enrolled customer in the ESA Program, LIHEAP, and the CDWx Pilot.

When Dual Providers had questions during assessments, the Facilitator provided on-site and telephonic support. In addition, the Facilitator coached one Dual Provider's field staff in the collection of LIHEAP audit data.

4.6 Diagnostic Testing

The assessment protocol required a pre-CAS inspection of all combustion appliances. This evaluation was documented in the CSD 700 paper form. Following the measure installation, PG&E's NGAT Protocol was applied. Since the Dual Providers were familiar with the combustion appliance testing already conducted as part of LIHEAP and the ESA Program, there were no issues in the implementation of diagnostics during the Pilot.

In addition to the combustion appliance diagnostic adjustments made for the CDWx Pilot, the Stakeholder Work Group determined that the duct and shell leakage diagnostic testing procedures would not be required or conducted. However, the prescriptive duct sealing protocol would be applied when duct sealing work would be performed.

4.7 Measure Installation

In accordance with the Pilot policy, the CDWx Work Order was presented to the customer by the Dual Provider after measures were installed. The ES/Assessor obtained the customer's signature and provide a copy to the household as previously described.

4.8 Post-Inspection

Standard ESA Program and LIHEAP requirements for inspection were met, and a unified inspection visit was conducted for all measures installed by the Facilitator's trained field staff. To schedule the QA inspection appointments in accordance with PG&E and CSD policy, at least two phone calls and one drive-by appointment visit were attempted. The LIHEAP and ESA Program policies for CGIs ("couldn't get in") and customer refusals were followed and documented on the inspection form.

If a measure fail was noted, the assigned Dual Provider was required to furnish the Facilitator with written confirmation of correction once the correction was completed.

4.9 Dual Provider Training

Three interactive on-site trainings were conducted in April 2018 and were attended by Dual Provider program coordinators, assessors, installers, and post-inspectors. Due to the use of Dual Providers, training for the existing ESA Program and LIHEAP measures was not necessary. Training primarily focused on Pilot-specific components including:

- Pilot policies.
- Pilot measures.
- PG&E ESA Program and CSD LIHEAP measure leveraging protocol.
- Customer education.
- Assessment process.
- The CDWx Pilot database and mobile application.
- Installation standards for CDWx pilot measures.
- Invoicing and reporting requirements.
- Inspection and quality assurance policies.

A demonstration was given showcasing the features and functionality of the database and its ability to communicate with the mobile application. Attendees were provided with credentials and access to the mobile application, allowing them to complete sample home assessments and become familiar with the electronic assessment form.

Dual Providers also received a sample of the individually tailored energy education materials and were invited to observe a demonstration of how to explain these materials to a customer. This activity helped to familiarize the Dual Provider's staff with the materials and outlined the expectations for the energy education process. Sample energy education materials are included in **Attachment D**.

During the training, Dual Provider staff received instruction on the installation criteria for the CDWx measures installed during the Pilot and the installation staff reviewed the QRS for each new measure to ensure proper measure installation in the field.

Additional training and support were provided as the Pilot progressed. The Facilitator's staff attended each Dual Provider's first home assessment to offer on-site support with the tablet-based electronic form and to clarify any program policies as questions arose. Dual Providers were also supplied with the CDWx Pilot training manual.

4.10 Reporting Database

The CDWx Pilot database tracked customer outreach efforts, home assessment information and documentation, installed measures, and job progress. In addition, outreach efforts were tracked by the Facilitator's CSRs, including the dates and times a customer was contacted, the results of the outreach, and whether the household met the income requirements in advance of the on-site enrollment visit.

Dual Providers were given access to the CDWx Pilot database, allowing them to submit the electronic CDWx Assessment and Enrollment Forms, review and edit assessment information, and receive work orders and completed LIHEAP and ESA Program forms. Dual Providers were

encouraged to update customer records regularly to ensure accurate portrayal of the home completion status. It was noted that measure assessment and installation data were not updated regularly, which ultimately extended the reporting process.

5. FINDINGS

At the conclusion of the CDWx Pilot, the team reviewed implemented processes and outcomes, final program data, and contractor experiences. This information was used in analyzing the program's success related to these objectives:

- AMI-driven household and measure targeting.
- Identification of measures outside of the ESA Program selected to reduce high usage.
- Integration of the alternate weatherization process.
- Measurement of the applicability of consumption-driven targeting for full ESA Program integration.

5.1 MEASURE INSTALLATION QUANTITATIVE ANALYSIS

The overall quantitative results are summarized in the Measures Installed Report provided in **Attachment B**. Salient excerpts are as follows:

- Overall, 50 homes were enrolled and treated in the CDWx Pilot.
- Eleven measures were added to the Pilot, representing a 35-percent (35%) increase in measures above the standard ESA Program .
- On average, homes received one assessment visit and one installation visit for the Pilot. Had the two programs (ESA Program and LIHEAP) been implemented separately, each would have required its own assessment and installation schedule. Therefore, the Pilot streamlined this process by approximately 50%.
- Forty-five of the 50 households participating in the CDWx Pilot received more energy-saving measures than they would have had they been served by only the ESA Program or LIHEAP (due to the addition of the CDWx measures). To this point, as many as 33 measures were installed in a single home during the Pilot.

These and other Pilot results are summarized in **Table 9**:

Table 9: Summary of Pilot Results

PARAMETER	HIGH-USAGE CUSTOMERS
# of Homes Enrolled	50
Average Quantity of Measures Installed per Home	19.5
Average Quantity of ESA Program Measures Installed	9.7
Average Quantity of LIHEAP Measures Installed	7.6
Average Quantity of CDWx Measures Installed	2.2
Average Total Expenditure per Home	$ 3,940
Average ESA Program Expenditure per Home	$ 1,447

PARAMETER	HIGH-USAGE CUSTOMERS
Average LIHEAP Expenditure per Home	$ 1,917
Average CDWx Measure Expenditure per Home	$ 890

5.1.1 AMI Data Quantitative Analysis

As depicted in **Figure 11** on the following page, the original four files transferred from PG&E identified 108,296 gas households and 24,150 electric households that were at 360% of electric or gas baseline or higher. Once the data within the files (identified as gas customer, electric customer, gas daily usage, electric hourly usage) were compared, however, only 7,369 "good" electric household files remained. This meant that 69% of the electric data was missing or incomplete. Similarly, the number of gas files was reduced from 108,296 to 5,732, which comprised a 95% drop. Because the Pilot required natural gas and electric data sets per household with complete data, only 5,732 households remained from the initial transfer. As there was an adequate quantity of households remaining in the dataset to meet the Pilot household goal, the decision was made by the Core Team not to investigate the rationale for incomplete data.

The original Pilot planning focused upon the ESA Program "never-served" households; therefore, with this objective, the 5,732 household files were reduced 1) by 1,712 for households that had previously been served between the 2002-2012 program years and 2) by 2,178 for households that had been served in 2013 and later. Once these two groups were removed, only 1,842 households that had never been served remained (32% of the 5,732).

The next step was to remove households that did not meet any of the high-usage inclusion criteria. Those households that met or exceeded the stakeholder-approved inclusion threshholds were then considered HEUs that qualified for the CDWx Pilot. Application of proprietary algorithms to identify non–high usage further reduced the number of eligible households to 1,144 (a reduction of 38% from the remaining 1,842 never-been-served dataset).

The Facilitator's CSRs and the three Dual Providers began outreach efforts to the pool of 1,144 households and experienced a fall-out rate of approximately 30% within the first month. It became apparent that 1,144 households would be an insufficient dataset to reach the participation goal at that rate of attrition.

Finally, the decision was made by the Core Team to expand the eligibility criteria. Instead of restricting services to households that had never been served within the ESA Program, eligibility parameters were revised to allow households that 1) had been served between 2002–2012 and/or 2) had at least 12 months of usage data (instead of 18 months). This modification of criteria resulted in an additional 1,888 households. With the reintroduction of this data group of 1,888 to the first data group of 1,144, the final number of targeted Pilot households became 3,032.

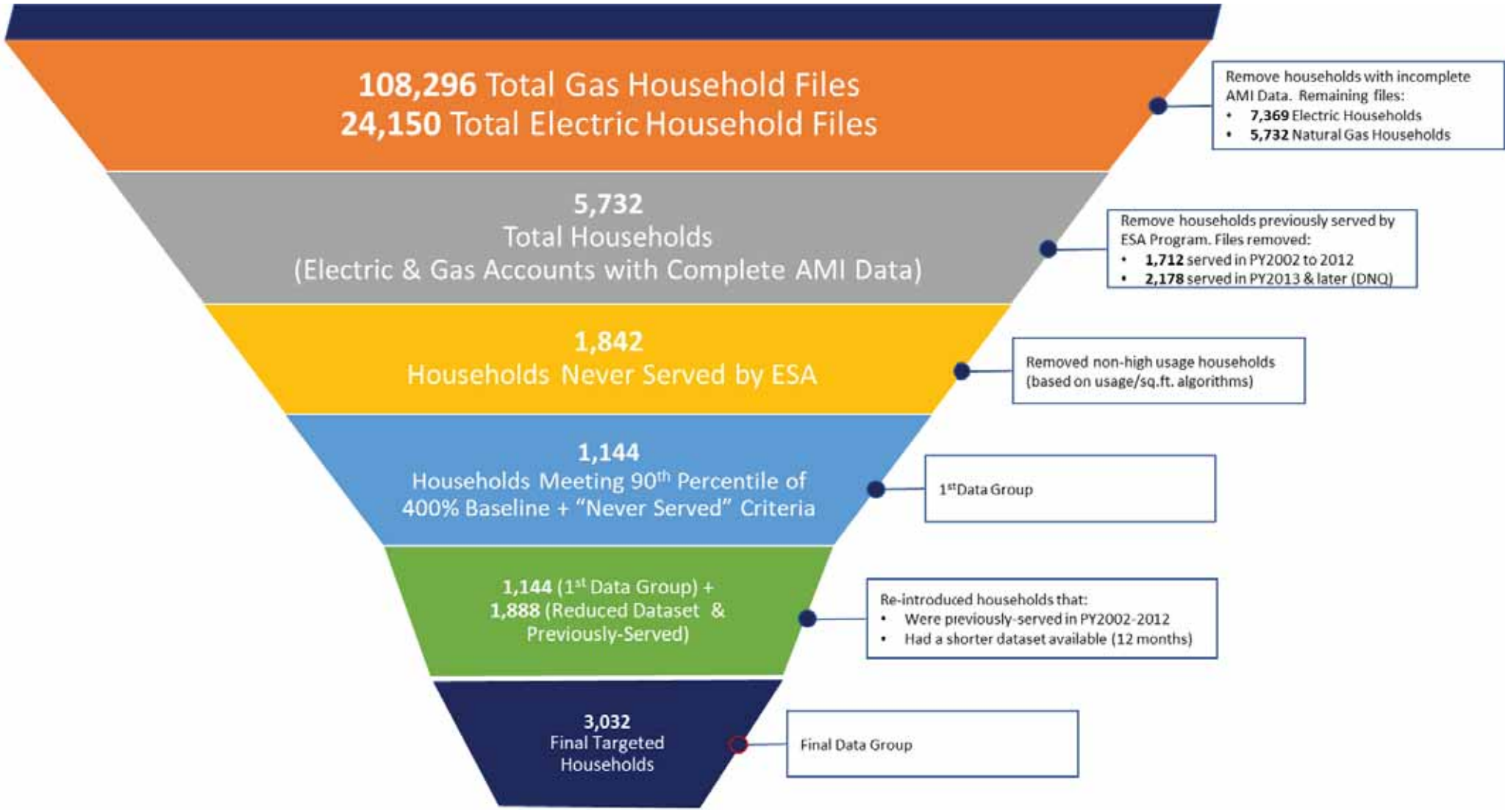

Figure 11: AMI Processing to Determine CDWx Targeted Outreach

5.1.2 Quantitative Outreach Efforts

Outreach efforts provided by the Facilitator's CSRs and the Dual Providers' staffs consisted of 5,258 phone calls, 217 letters, three cold calls (unscheduled home visits), and 1,422 emails as depicted in **Figure 12**.

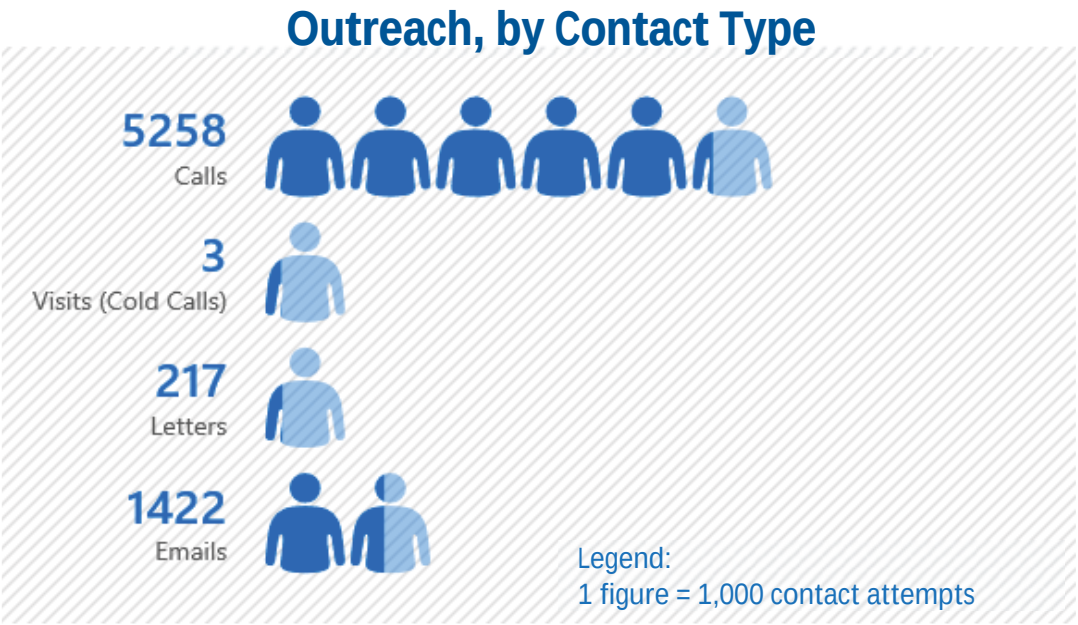

Figure 12: Summary of Outreach Efforts

Phone contact was attempted for 3,032 households. The results of this effort are listed in **Table 10**:

Table 10: Final Telephonic Contact Results

FINAL TELEPHONIC CONTACT RESULTS	QUANTITY	PERCENTAGE
Business Number	20	0.7%
Busy Signal	19	0.6%
Customer Deceased	2	0.1%
Customer Requested Callback	20	0.7%
Customer Requested More Info	3	0.1%
Customer Will Call Back	16	0.5%
Disconnected Number	121	4.0%
Does Not Qualify	31	1.0%
Doesn't Have Time to Talk	12	0.4%
Fax Machine	2	0.1%
Hang Up	13	0.4%
Installed Solar	3	0.1%

FINAL TELEPHONIC CONTACT RESULTS	QUANTITY	PERCENTAGE
Interested	22	0.7%
Left Message with Household	10	0.3%
Left Voice Mail Messages	754	24.9%
Moved/Moving	103	3.4%
No Answer	93	3.1%
No Number Listed	5	0.2%
Not CARE Enrolled	6	0.2%
Not Interested	182	6.0%
Recently Completed Upgrade	6	0.2%
Other	2	0.1%
Owner Won't Authorize	25	0.8%
Renter- POA Provided	5	0.2%
Reschedule	3	0.1%
Dual Provider to Direct-Contact	1301	42.9%
Scheduled Appointment	52	1.7%
Served by ESA	25	0.8%
Transferred to Dual Provider (Warm Transfer)	69	2.3%
Voice Mailbox Full	44	1.5%
Wrong Number	63	2.1%
Total:	3032	100.0%

Outreach letters resulted in the lowest rate of customer response with zero return calls to the Facilitator's call center. Emails generated six return responses from customers (four interested, two not interested).

5.2 QUALITATIVE OBSERVATIONS

To maximize the opportunity to learn from the experience of the CDWx Pilot, an exit interview was held with each Dual Provider. Facilitator observations were also documented.

5.2.1 AMI Data Requests

Background

Start-up of the Pilot was delayed while PG&E and the Facilitator's data analysts worked on the data points necessary to create a usable AMI dataset. The quality of data was scrutinized, and eventually the parameters were loosened in order to create a customer pool large enough for the Pilot.

Facilitator Feedback

Incomplete AMI information (i.e., missing data points), which are listed in Section 4.1.2, created some functionality and accuracy issues and required workarounds to ensure that HEU households were not inadvertently left out of the CDWx Pilot.

Findings

Based upon the AMI data request process and discussions, some of the targeting parameters were adjusted (widened) and modification of the HEU definition was required in order to obtain a target group large enough to be viable for outreach and meet Pilot goals.

5.2.2 Client Eligibility

Background

In all but one ESA Program income eligibility level (i.e., for a two-person household), the ESA Program income levels are higher than the LIHEAP income level as depicted in **Figure 13**. The Pilot required full income documentation to determine eligibility, as is required by LIHEAP.

Provider Feedback

Dual Providers found that there was the potential for households whose income level is above the LIHEAP eligibility level, but at or below the ESA Program income levels not to be served.

Findings

Ultimately, this gap in the eligibility criteria creates a negative impact for any ESA Program-qualified households that are disqualified from the Pilot when LIHEAP income levels are applied. Additional consideration of income levels and the potential impact to customers would be appropriate for future leveraging efforts.

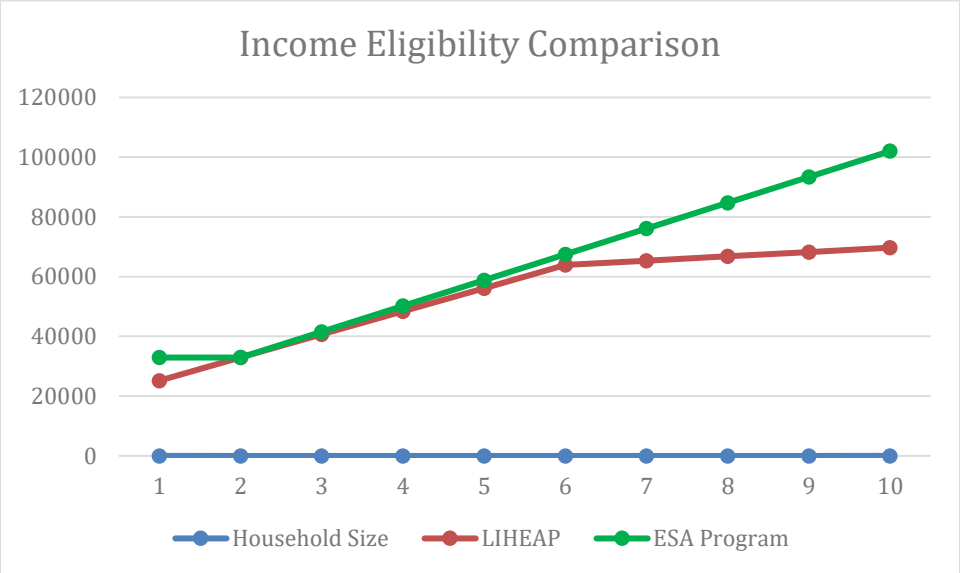

Figure 13: Income Eligibility Comparison

5.2.3 Training

Background

The CDWx Pilot utilized the existing policies and procedures of both the ESA Program and LIHEAP; therefore, training offerings were centered on Pilot-specific content. One-on-one training was conducted with Dual Providers over the course of three days (one Provider per

day). During the training, Dual Providers were instructed on Pilot-specific policies, measures and the related installation standards, and were given hands-on experience with the electronic assessment tools and processes. Each Dual Provider received the *Consumption-Driven Weatherization (Wx) Pilot Training Resource and Training Manual*, complete with all content covered during the training process. Ongoing training and assistance were provided after launch of Pilot.

Provider Feedback

Although the training was found beneficial in Phase I, Dual Providers requested a refresher in Phase II prior to beginning the assessment process, measure installation, billing, and use of the electronic database and tools. The ongoing assistance was highly beneficial and helped to familiarize the Dual Providers with the process and tools at their disposal.

Facilitator Findings

CDWx Pilot training feedback was reviewed and the findings are as follows:

- A span of time passed between the training and the first customer appointment for each Dual Provider. During that span, the Dual Providers did not have appointments that allowed them to practice the Pilot-specific policies and procedures.
- Dual Providers' ES/Assessors that were accompanied by the Facilitator's staff during their first CDWx Pilot home enrollment and assessments and utilized support staff over the duration of the Pilot were found to be more successful when implementing the policies and procedures and the electronic tools.

5.2.4 Outreach and Customer Referrals

Background

The Pilot specifically targeted customers with high energy usage who had never participated in the ESA Program. The Facilitator's CSRs conducted the initial outreach, immediately transferring customers expressing interest in the program to Dual Provider staff to be scheduled.

Provider Feedback

Dual Providers identified challenges with the outreach process and the customer base in the CDWx Pilot. The identified challenges are as follows:

- The targeted customer base was highly unresponsive to outreach efforts. Despite the use of various outreach strategies (e.g., phone, email, letters, etc.), customers were difficult to contact.
- Of those customers who were responsive to the outreach efforts, several expressed a lack of interest regarding the program and its offerings.
- Some customers who expressed interest met the ESA Program qualifications but were found ineligible under the LIHEAP qualifications, so they were not eligible for the Pilot.
- On occasion, eligible customers who expressed interest in the program had already received weatherization services through another contractor.
- Customers who initially expressed interest in the program often became unresponsive when the Dual Provider attempted to schedule weatherization services. Many customers would repeatedly reschedule appointments, and eventually cancel the work

altogether.

- The outreach process occasionally resulted in the loss of interested customers upon receipt of additional information about the Pilot.

Provider Findings

Feedback regarding outreach and customer referral challenges was reviewed, and the findings are as follows:

- A significant percentage of the customer base was composed of homes that had never received weatherization services. A great majority of customers who have never been served are likely never to be served due to a lack of interest in participation.
- Development of co-branded collateral materials may help reinforce customer understanding of program benefits.
- Data from the initial data request that was used to identify high use customers was 6–9 months out of date by the time the customer was contacted for the on-site visit, resulting in a high percentage of customers who had moved, had received weatherization services by another contractor in the intervening time, or were no longer eligible for the Pilot.

5.2.5 Household Intake

Background

CDWx Pilot customers were subject to both the ESA Program and LIHEAP income qualifications and were required to provide income documentation. An electronic tablet-based form was used to capture of customer information and income calculations.

Provider Feedback

Dual Providers noted that:

- The tablet-based electronic form streamlined the intake process, allowing a single form to be completed. The form was simple and provided clean, legible documents.
- One visit was required to enroll the customer in both LIHEAP and the ESA Program.

In addition, the Dual Providers noted several challenges in the intake process, as provided below:

- Many customers were found to qualify for the ESA program but could not meet the income requirements for LIHEAP.
- Customers did not always have the required documentation on hand during the on-site visit even though they were advised to do so during the outreach call. This required the enrollment/assessment appointments to be rescheduled.
- A great deal of paperwork was required for enrollment in both programs. The auto-population of more, if not all, forms for LIHEAP and the ESA Program would have been beneficial and would have further streamlined the process.
- A camera feature could be added to the electronic CDWx Enrollment and Assessment Form to allow the assessor to capture images of the required income documents, store them directly in the form, and submit the images with the assessment to the database.

Facilitator Findings

PG&E's Energy Insight data system was introduced for the ESA Program mid-way through the Pilot set-up process, and the Dual Providers were required to implement new practices after beginning Pilot services under the former data system. Until the Dual Providers became more familiar with the new system, especially the method for "reserving" premises was worked out, enrollment complications were encountered.

5.2.6 Dwelling Assessment

Background

The CDWx pilot utilized measures from the ESA Program and LIHEAP, and incorporated new CDWx measures. Dwellings were assessed for all feasible measures. Qualifying measures were installed based on the household's high usage type(s) (e.g., high always-on, high cooling, high electric baseload, etc.). The assessment process was completed using the tablet-based electronic form.

Provider Feedback

Dual Providers noted that, anytime multiple programs can be leveraged to offer the customer more measures in a single visit, the more streamlined the process will be and the more the customer would benefit from the program. Customers were frequently found to fall into multiple high use categories and all measures were available to them. The assessment process was similar to that of other programs; however, it required fewer visits to the home.

Provider Findings

No additional findings.

Facilitator Findings

It was found to be extremely valuable for ES/Assessors to have existing knowledge, skills, and experience in both the ESA Program and LIHEAP. In general, this dual program familiarity was found to be important due to the complexity of the procedures, forms, and feasibility criteria related to both programs.

5.2.7 Diagnostics

Background

The CDWx Pilot required Dual Providers to conduct a pre-CAS and post-NGAT test.

Provider Feedback

Dual Providers were familiar with both processes and did not require technical assistance in diagnostic testing.

Provider Findings

No additional findings.

5.2.8 Measure Installations

Background

Based on the feasible measures found in the home, a work order was generated by the

electronic assessment form. Measures were installed in accordance with the program feasibility and installation policies for the program that they were billed under. The CDWx Work Order identified the measures and the assigned program. During installation, crews were to note any deviations from the assessment as well as update measures and measure quantities to ensure proper billing.

Provider Feedback

Dual Providers noted one advantage and two disadvantages to the measure installation process. The advantage was:

- The Work Order which provided documentation identifying which programs the measures were to be billed to was found to be highly beneficial. Not only did the Work Order provide an identified list of measures, it allowed the Dual Provider to quickly identify which program guidelines to follow when installing the measure, streamlining the installation process.

Disadvantages were:

- Modifying the existing installation standards, or creating an all-encompassing set of Pilot standards, might have further streamlined the process.
- Since higher cost items for energy efficiency upgrades like central heating and cooling replacement or water heater replacement were attributed to LIHEAP, they required an energy audit to justify installation. Dual Providers identified some challenges with the energy audit process, including energy audit processing and review time and the minimum required Savings-to-Investment-Ratio (SIR) value of 1.0 or greater for installation.

Provider Findings

No additional findings.

5.2.9 Quality Assurance

Background

QA efforts were defined based on the CDWx Pilot-aligned policies and installation standards. These documents, in combination with post-inspections, were used to determine if Dual Providers successfully accomplished measure assessment and installation goals. Inspection criteria were based directly upon the IS or the WIS or the QRS, and measure installations were required to meet feasibility and quality installation guidelines. See Appendices E and F for the QRS and Pilot Inspection Form.

Provider Feedback

LIHEAP policy, and application of this policy to the CDWx measures, meant that installation work could only be billed following post-inspection. Scheduling or completing the post-inspections to coincide with the conclusion of measure installations would expedite the close-out process. In addition, timing of the Pilot's reporting and billing close-outs should be set to limit interference with existing programs' deadlines to the extent possible.

Facilitator Findings

Inspection results of measure installations showed overwhelmingly that quality of installation of new measures was not an issue during this Pilot.

5.2.10 Database Reporting

Background

The CDWx database was used to store customer and home assessment information for the Pilot. The database communicated with the tablet-based electronic form, allowing the Dual Provider to collect all necessary information on the tablet and automatically update customer information upon its submission to the database. The database generated and automatically populated CSD LIHEAP and PG&E ESA Program forms, as well as Pilot-specific work orders and invoices.

Provider Feedback

Overall, the Dual Providers responded positively to the data collection tools and the forms generated by the database. Feedback confirmed that the electronic forms captured all necessary data, and the electronic signatures made completing forms relatively easy.

- The database and tablet-based electronic form worked well together and made updating customer information easy. Once the user became familiar with the database it was simple to use; however, the database did require a learning curve for some users.
- It was noted that some of the CDWx Pilot database features could seem less accessible or more difficult to navigate due to the layered page design of the system.
- It would be helpful for the Pilot database to communicate directly with PG&E's ESA Program data system and the CSD data system, or a separate dedicated database that reports for both programs should be developed to reduce redundant reporting.

Facilitator Findings

Ideally, future databases would have additional features to ensure that fields were not left empty or duplicated, income levels were evaluated upon data entry, and minimum measure eligibility was flagged if the minimum measure qualification was not identified as feasible. These features would allow Dual Providers to review and correct data entry errors before document submittal.

5.2.11 Customer Satisfaction

Background

No customer satisfaction survey was employed in the Pilot; however, customers who expressed questions or comments about the Pilot were encouraged to contact the Dual Provider. These comments/questions were also documented on the inspection reports, and inspectors followed up with the Dual Provider to ensure that they were addressed.

Provider Feedback

Overall, customers were accepting of these additional measures and appreciated the measures received. Non-participating households were often more reluctant to participate due to perceived privacy concerns or because of other program requirements.

Customers who were identified as HEUs and did not receive weatherization services within a specified timeframe were removed temporarily from the CARE Program as a standard practice, which can impact customer satisfaction. On completion of ESA Program participation, these customers were reinstated in the CARE Program.

Facilitator Findings

Customers eligible for the CDWx Pilot were enrolled in the CARE Program. As required by ESA Program policy, these HEUs have their CARE assistance suspended until the dwelling is weatherized. After the home is treated, CARE status is reinstated on the customer's bill. Although this practice is an incentive for ESA Program Providers to give prompt and timely service within the CDWx Pilot, a Dual Provider notified the Facilitator that a couple of customers experienced a short waiting period for reinstatement due to Pilot timelines. This could be prevented by adjusting the standard CARE suspension policy for participating Pilot households.

5.2.12 Program Documentation and Billing

Background

Measures and activities belonging to either the ESA Program or LIHEAP were billed to the designated program under which the measure was installed. Standard billing practices governed and were applied for each program. CDWx measures were billed separately using the CDWx Pilot database and invoicing system.

Provider Feedback

In general, the ESA Program and LIHEAP have separate billing departments and procedures. The Dual Providers did not have to modify their billing processes for ESA Program and LIHEAP measures. Some jobs took longer to bill than others because the homes received LIHEAP measures that required an audit to justify installation. Once the audit was approved, measures could be installed.

The Dual Providers noted it would further streamline the intake process if additional program forms were converted to automatically populate with customer information.

Findings

Overall, the reporting and billing process were adequately robust; however, additional electronic program forms (to replace existing paper forms) would further streamline the process if they were made available. In addition, supplemental training and support for Dual Provider field staff on the use of the tablet forms and database would be helpful.

5.3 Pilot Successes and Challenges

The CDWx Pilot successfully treated 50 HEU households by installing measures selected based on their usage as identified through data analytics and targeted measure prescription. Pilot efforts resulted in these achievements:

- Use of AMI data to identify electric and natural gas HEUs with inefficient homes.
- Selection of measure suites tailored for each Pilot-eligible home based on metered consumption.
- Incorporation of a larger suite of energy-saving measures, many outside of the existing ESA Program offerings.
- Application of one set of income eligibility requirements for participating households.
- Strategic leveraging of resources to maximize impacts by utilizing contractors who serve both programs for the installation of measures.

In order to achieve the pilot results , it was necessary to overcome several programmatic challenges that were discovered during the Phase II Pilot Implementation. Based upon the Dual Providers and Facilitator feedback, the challenges to the CDWx Pilot design are summarized in **Table 11**.

Table 11: Summary of CDWX Pilot Challenges

BARRIER	DESCRIPTION
AMI Data	A substantial percentage of customers identified as HEUs could not have their AMI data analyzed (see Section 5.1). Customer data was inaccurate, inconsistent, or incomplete (i.e., less than 12 consecutive months), which made those households ineligible for the alternative weatherization process.
Pilot Customer Base	Qualifying customers in this group are difficult to contact and, as a group, seem to: • Be unreliable/unmotivated to participate, • Have a higher percentage of missed/canceled appointments, • Require a higher number of contact attempts utilizing different approaches to overcome customer reluctance to share eligibility data or other personal information.
Household Reservation Feature in Energy Insight	Initially, the feature that would allow a Dual Provider to "reserve" households was not operational in PG&E's Energy Insight data system. A percentage of customers targeted through AMI data were "lost" to the Dual Provider because another local area contractor contacted and served the customer first. Because these additional measures could impact the final energy savings outcomes, all measures installed regardless of Provider are included in the household measure counts. The reservation feature is now operational, and the Dual Providers were taught to use this method for the ESA Program.
Eligibility Criteria	LIHEAP income eligibility criteria are more restrictive than the ESA Program income eligibility criteria. When using the LIHEAP criteria, a percentage of customers that might otherwise be eligible for the ESA Program may not be served unless categorical acceptance could be reciprocated.
Housing Stock	Typically, the housing stock of qualified customers is greatly deteriorated due to delayed maintenance. Program leveraging became important in these homes to support these substantial repairs.
Energy Audits	Discussions in the design and planning phase determined that some measure upgrades would be leveraged with LIHEAP. In order to install these energy efficiency upgrade measures (i.e., replacement of heating, cooling, or water heating appliances with higher efficiencies, or replacement of a home's windows), an energy audit with a savings-to-investment ratio (SIR) of 1.0 was required. Although these measures potentially would provide the greatest immediate impact to high usage

BARRIER	DESCRIPTION
	households, they were not feasible if they did not reach the SIR requirement.
Contractor Resistance to Change	In this Pilot, some Dual Provider staff (including field and administrative personnel) had difficulty shifting to automated methods of performing enrollment, assessment, installations, and reporting. Incorporation of technology provided additional challenges for staff unfamiliar with tablets or databases.

6. CONCLUSIONS

The Pilot was designed to test an innovative way to identify HEUs and establish an alternative weatherization process that would incorporate additional measures into the current ESA Program. Based on the CPUC goals identified in Final Decision 17-12-009, these goals were met as identified in the sections below.

6.1 MEASURES ADDED FOR THE CDWX PILOT

The CDWx Pilot tested and applied an alternative treatment for HEU households to reduce usage in their high energy usage areas. Deeper suites of measures were developed by leveraging the ESA Program with LIHEAP, and incorporating 11 new measures outside of PG&E's and existing offerings (representing a 35 percent increase). Through the Pilot, 90% of households received one or more of the CDWx energy-saving measures (outside of the standard LIHEAP or ESA Program offerings).

6.2 USE OF AMI DATA TO TARGET HIGH USAGE CUSTOMERS

The Pilot defined and tested a straightforward process for using AMI data to target HEU households and define areas of high usage (i.e., high heating, high cooling, and high baseload [gas or electric]). The datasets were employed to successfully identify HEUs. In the best-case scenario, 18 months of AMI data could be secured to eliminate anomalies in data. This data requirement proved too difficult to obtain for the majority of households and the criterion was reduced to 12 months. The lack of availability of this data could potentially be due the number of income-qualified households that move regularly or have service interruptions/disconnections.

6.3 DEVELOPMENT OF THE ALTERNATIVE WEATHERIZATION PROCESS

The alternative weatherization process can be an appropriate method to identify and reach HEU households, conduct enrollment activities, assess dwellings using an AMI-driven analysis, install measures, and complete quality assurance inspections. The original alternative weatherization process anticipated by this group underwent several iterations of modification and improvement during the field testing to achieve this streamlined outreach, enrollment, and measure installation process.

The final process was enhanced through the use of Dual Providers and incorporated existing program policies and standards. The AMI data analytics enabled the Dual Providers to enter the home knowing which targeted measures should have the greatest effect on energy usage.

6.4 REDUCTION OF CUSTOMER TOUCHES

Through leveraging of the ESA Program and LIHEAP, customer touch points can be decreased. As stand-alone entities, each program would have conducted outreach, enrolled, assessed, and installed measures separately but in parallel. Through the leveraging efforts of the Pilot, households were served concurrently, thus reducing the total number of times the customer was touched by 50%.

7. RECOMMENDATIONS FOR FUTURE APPLICATIONS

The CDWx Pilot demonstrates that AMI data may be used to identify HEU households and the specific area(s) of high usage, such as high heating, high cooling, or high baseload use, in an effort to reduce energy consumption through targeted installation of these measures.

Opportunities exist to expand the concepts developed and tested during the CDWx Pilot for incorporation into the ESA Program by:

- Using AMI data analysis for ESA Program customers in order to target HEU households on an ongoing basis,
- Increasing the measure offerings within the standard ESA Program,
- Reserving an additional set of measures for identified HEU households, and
- Continuing to identify measures that would be most impactful to HEU customers.

In order to expand on the approaches used in this pilot, the following items are provided for consideration.

7.1 CUSTOMER TARGETING

The use of AMI data for targeting of HEU customers allowed the Dual Providers insight into the key areas in which each dwelling was using energy inefficiently. It further predicted the actual measures to be installed. However, the Pilot also uncovers challenges regarding the processes of requesting, checking, analyzing, and utilizing the results of the AMI data for measure selection. Suggestions for future data acquisition include:

- *Secure complete data sets*: Efforts should ensure that all customers have at least 12–18 months of usage data and that data is provided in a consistent format. This will allow the maximum number of individuals to be screened and served through the alternative weatherization process while reducing the amount of time required to perform the AMI-driven targeting.
- *Use ongoing data*: Especially for this customer base, it is extremely important to receive updated data regularly. Many customers did not have at least a year's worth of data at the onset of the analysis (potentially due to moving or service disconnections) and were dropped from the target group for this sole reason. If periodic data sets could be provided, these new data points would be continually updated in the existing analysis. It is likely that a percentage of dropped customers will qualify as HEUs as new data becomes available.
- *Augment the definition of HEUs*: Reconsider the definition of high usage to be more specific (not just >400% of baseline). IOU baseline figures do not account for the size of the home or the number of individuals residing in the home. It is recommended to explore additional metrics that can be used in lieu of the existing high usage definition to flag inefficient homes.
- *Modify/redefine the data request process*: Acknowledge the need for data flexibility by promoting a collaborative effort during the IOU data request period. For example, consider using the Premise ID in addition to the Service Account ID to allow targeting of the dwelling, not only the customer.

- *Employ consumption-driven weatherization principles strategically*: Test the alternative weatherization process for previously served ESA Program customers who are identified as continuing to have high usage.

7.2 TRAINING

Though the use of Dual Providers eliminated the need to provide training on established ESA Program and LIHEAP polices, Dual Providers still required coaching on the new alternative weatherization process and leveraged policies. As consumption-driven methods are expanded, it is important to allow time for additional in-field coaching of the Dual Providers' field staff when Pilot practices are new. It is also recommended to familiarize administrative and outreach staff with reporting and field data entry practices to ensure accurate and timely information is captured.

7.3 LEVERAGING TOOLS

Many Dual Providers currently offer both programs but have separate teams working in parallel due to the programmatic differences between the ESA Program and LIHEAP. Aligning fundamental program policies and creating tools to aid in leveraging both programs may close the gap and allow all Providers to offer both programs concurrently as a normal business practice. Recommendations for promoting ongoing leveraging include:

- Consideration of possible electronic form formats to integrate the ESA Program forms and LIHEAP forms into a single application.
- Continued alignment of processes in all efficiency programs to streamline program efficiencies. See Section 7 for recommendations.
- Work with database staff to determine if the PG&E, CSD, and other leveraging program invoicing components can be connected using XML upload files.
- Creation of co-branded marketing materials to aid in outreach efforts.

7.4 ENHANCE PROGRAM MEASURE OFFERINGS

Most of the HEU households qualified for the installation of one or more CDWx measures. Based upon the wider energy savings potential of some of these measures, it is recommended that they be applied to the standard ESA Program while others be reserved for HEU households only. **Table 12** identifies which of the CDWx measures are recommended to transition into the standard ESA Program offerings and become available to all ESA Program-eligible customers.

Table 12: Summary of CDWx Program Measures and Recommended Ongoing Applications

CDWx MEASURES	RECOMMENDED STATUS for FUTURE ESA PROGRAMS	
	Standard ESA	HEU Reserved
Attic Sealing (Stand-Alone)		✓
Attic Sealing with Ceiling Insulation		✓

CDWx MEASURES	RECOMMENDED STATUS for FUTURE ESA PROGRAMS	
	Standard ESA	HEU Reserved
Blower Motor Retrofit	✓	
Energy Star Clothes Dryer		✓
Enhanced Time Delay Relay	✓	
LED Security Light	✓	
Prescriptive Duct Sealing	✓	
Refrigerant Charge	✓	
Smart Thermostat	✓	
Thermostatic Tub Spout	✓	
Variable Speed Pool Pump		✓

As further identified in **Table 12**, due to measure investment and energy savings potential, it is recommended that four measures be reserved for AMI-identified HEU households and be assigned based on the household's calculated high usage bucket(s). An alternative program path should be designated for HEUs within the ESA Program to tailor measure offerings to each customer's specific needs based on AMI data. This ensures that measures that do not provide energy savings, specifically to reduce high usage, are not installed in those households.

Lastly, it is recommended to continue exploring new technologies to decrease energy usage and continue to improve and expand measure offerings.

7.5 Modification of Program Policies to Enhance Leveraging Opportunities

As program policies between the ESA Program and LIHEAP align, there is a greater opportunity for leveraging to become the norm. Notable policies to consider for further alignment or modification include the following:

- *Income guidelines*: Consider categorical eligibility so customers are not "lost" in the gap between the ESA Program and LIHEAP income eligibility requirements.
- *Diagnostic testing*: Continue aligning diagnostic testing requirements.
- *Evaluate current measure feasibility*: Determine if LIHEAP installation requirements can be waived to align with the consumption-driven approach when high usage is identified (e.g., requiring audits to install a new air conditioner when billing shows inefficient cooling, rather than considering only the standard program feasibility criteria).

7.6 Considerations for Expansion Outside of Utilizing Dual Providers

The alternative weatherization approach tested in the Pilot would require either 1) continued leveraging with CSD Providers, or 2) expansion of the ESA Program measure offerings.

Because there are significant measure costs associated with some energy efficiency upgrades installed in LIHEAP (i.e., heating, cooling, water heating, and whole-house window replacements), it may not be feasible to simply add these measures to the ESA Program without a deeper analysis of the necessary investment and payback potential.

Due to the small quantity of Dual Providers participating in PG&E's service territories, it may be beneficial to have a collaboration framework to partner ESA Program contractors with LIHEAP Providers.

10. Appendix E: PG&E's Final Non-Deed Restricted Property Analysis

The Decision states "The IOUs shall conduct and report an annual analysis of the square footage, energy consumption, ESA Program participation, and time since the last retrofit of non-deed restricted multifamily properties with a high percentage of low-income tenants."

Additional guidance from ED requested IOUs follow the approach used by SDG&E in their Multifamily HOPPs. The SDG&E MF HOPPs approach first screened for "buildings with eligible zip codes for moderate income, low-income, and system capacity constrained areas" using PRIZM code data (SDG&E Advice Letter 2865 E-B). Second, they used Costar data to further assess which multifamily buildings had the right mix of physical characteristics. At the time, SDG&E used a tool created by a third party, Detectant, to determine energy use intensity (EUI). It is our understanding that the IOUs can use Energy Star Portfolio Manager to benchmark multifamily properties that meet the ESA "targeted self-certification" geographic area requirements. We understand that there are some barriers to collecting the data for this analysis, in particular directly linking household size, income levels, and address. By partially following the SDG&E MF HOPPs process to focus on areas with "targeted self-certification" this should avoid that issue.

At a minimum, each IOU's 2019 Analysis should report on non-deed restricted, multifamily buildings with a high percentage of low-income tenants (with five units or more) located in "targeted self-certification" areas. All the buildings in this geographical area are presumed to meet the required definition of having a high percentage of low-income tenants (see Appendix with May 2018 Guidance).

Based on PG&E's most recent understanding of the requirements for the multi-family (MF) non-deed analysis, PG&E provides an overview of its approach for the 2019 analysis, as compared to San Diego Gas & Electric's (SDG&E) approach as outlined in their High Opportunity Projects and Programs (HOPPs) proposal.[1] This overview is provided in Figure 1.

[1] Per.D.17-12-009 (modifying D. 16-11-022), the Commission ordered the IOUs to adopt, as appropriate, the approach to multifamily non-deed analysis as outlined in SDG&E's Advice Letter 2865 E-C, Submission of High Opportunity Projects and Programs (HOPPs) Proposal — Multifamily HOPP Program (SDG&E 3318), p.16

Figure 1. Analysis Compliance Table

Analysis Method/SDG&E HOPPs APPROACH	PG&E APPROACH	HOW THEY DIFFER/CHALLENGES FACED/ROAD BLOCKS
Screen "buildings with eligible zip codes for moderate income, low-income, and system capacity constrained areas" using PRIZM code data.	PG&E's approach follows requirements in D.17-12-009 (modifying D. 16-11-022), and guidance document provided by Energy Division[2], PG&E layered PRIZM code data provided by Athens Research to properties in CoStar to identify buildings located in "self-certified" low- and moderate-income areas by zip code.	PG&E took a similar approach by using new Athens Research data that separated single family (SF) and MF household/unit reporting (2018 data combined all residential types, MF + SF). Therefore, PG&E modified the analysis to include geographic areas with a high percentage of MF units only in eligible self-certified areas.
Use CoStar data to further assess which multifamily buildings had the right mix of physical characteristics.	The PG&E approach uses CoStar data to filter for properties with >5 units, building class (B&C), year since last (reported) retrofit, and common area features. Note physical characteristics in CoStar are limited.	PG&E took a similar approach by using CoStar data. **Challenges:** CoStar has limited data on income, year since last retrofit, and physical characteristics. Therefore, narrowing the sample population with these factors is difficult. Additionally, CoStar only reports rentable property square footage, it does not include common areas.
At the time of analysis, SDG&E used a tool created by a third party, Detectant, to determine energy use intensity (EUI).	PG&E reported out on energy consumption and EUI for residential spaces only since common area sq. ft. was not available at the time of this analysis.	PG&E did not use a third-party tool to determine EUI. PG&E has contracted with Res-Intel to improve its understanding of all multifamily properties in its territory. PG&E has engaged Res-Intel to refine its multifamily properties meter mapping. PG&E expects this data to be available for use by the end of 2020.
The IOUs can use Energy Star Portfolio Manager to benchmark multifamily properties that meet the ESA "targeted self-certification" geographic area requirements	In 2019, PG&E used their Building Benchmarking database to analyze all previously benchmarked multifamily properties (self-benchmarked by property owners or programs e.g. ESA, MUP, LIWP, etc.). None of the buildings in the Building Benchmarking database were located in in a geographic area with >80% of residents meeting low income eligibility.	

[2] "Energy Division Informal Guidance – November 2018" memo

Methodology

2019 marks PG&E's second annual analysis of non-deed restricted multi-family properties. In 2018, the first year of analysis, PG&E focused on determining the volume of the non-deed restricted multifamily market in PG&E's service territory and analyzing a subset of those properties that have a high percentage of low income tenants. To do this, PG&E used CoStar data to estimate the total number of non-deed restricted properties within PG&E's territory and to identify properties in areas with a high percentage of low-income tenants (>80%) by using PRIZM data from Athens Research.

In 2019, PG&E acquired updated CARE eligibility data from Athens Research to use in conjunction with updated CoStar data. The updated Athens Research data provided a breakdown of potentially ESA eligible households/units by single-family and multi-family,

whereas in 2018, data was presented by total residential household/units (combining single-family + multi-family). Therefore, percentages of low-income tenants may vary when combining all single-family and multi-family compared to analyzing only the multi-family market. PG&E presents the updated estimated number of properties [1] from CoStar by CARE eligibility according to percentage of Federal Poverty Line (FPL) thresholds in Figure 2. As of 2019, PG&E estimated 1,055 non-deed restricted properties[3] located in geographic areas with a high percentage (>80%) of low-income tenants. (Note the total number of properties from 2018 to 2019 vary due to updated Athens Research data.)

Figure 2. 2019 Non-Deed Restricted Property Estimates by ESA Eligibility

PG&E Multifamily Market (+5 units)						
	Deed			Non-deed		
% at or below 200% FPL	Properties	Buildings	Units	Properties	Buildings	Units
≤ 50%	1,246	7,756	115,311	16,415	42,519	480,889
50% - 65%	512	4,165	40,225	3,728	16,515	133,719
65% - 80%	402	4,123	30,156	2,340	8,528	56,369
≥ 80%	307	4,240	20,537	1,055	3,483	22,237
Total	2,471	20,284	206,229	23,537	71,045	693,214

Results

The target population for the analysis is non-deed restricted properties with a high percentage of low-income tenants (>80% of residents are at or below the 200% federal poverty line). PG&E analyzed 160 properties (15% of properties in geographic areas with >80% low income

[3] Actual number of properties may vary. CoStar is not representative of all properties within a geographic region.

tenants). Figure 4 and Figure 5 summarizes the 160 properties [4]total energy. Note some properties may only receive one fuel commodity from PG&E, see Figure 3 below for breakdown by fuel type.

Figure 3. PG&E Fuel Service Breakdown

PG&E Service	# of properties
Gas and Electric	140
Electric Only	16
Gas Only	4
Total	160

Figure 4. PG&E Multifamily Non-Deed Restricted Property Analysis – Electric Consumption

Category	Number of Properties	Average Sq. Ft.	Total 2019 Annual MWh	Total 2019 Annual MWh for Common Areas	Total 2019 MWh for Units	Total 2019 Annual MWh for Master Meters
Sq. Ft. <99,999	154	17,905	11,921	300	11,620	N/A
Sq. Ft. >100,000	2	156,156	915	4	911	N/A
Sq. Ft. Data Missing	N/A	N/A	N/A	N/A	N/A	N/A
Totals	156		12,836	304	12,531	

Figure 5. PG&E Multifamily Non-Deed Restricted Property Analysis – Gas Consumption

Category	Number of Properties	Average Sq. Ft.	Total 2019 Annual Therms	Total 2019 Annual Therms for Common Areas	Total 2019 Therms for Units	Total 2019 Annual Therms for Master Meters
Sq. Ft. <99,999	142	19,272	433,070	10,209	422,861	N/A
Sq. Ft. >100,000	2	156,156	28,553	0	28,553	N/A
Sq. Ft. Data Missing	N/A	N/A	N/A	N/A	N/A	N/A
Totals	144		461,623	10,209	451,414	

[4] Annual usage is July 1, 2018 to June 31, 2019. An error in the 2018 energy consumption data from the 2018 analysis was identified and corrected for the 2019 analysis. It was determined that the error consisted of incorrect billing data and was corrected for 2

PG&E's analysis included calculating EUI for all properties (Figure 6). The analysis used rentable[5] square footage obtained from CoStar and residential dwelling unit consumption data. Of the 140 properties that receive both gas and electric service from PG&E the average EUI was 29.8. Twenty properties in the analysis receive only one fuel service (gas or electric) from PG&E.

Figure 6. PG&E Energy Use Intensity for Non-Deed Restricted Properties: Residential Dwelling Units

	2019 Residential Dwelling Unit EUIs		
	Electric + Gas Properties (Average)	Electric Only Properties (Average)	Gas Only Properties (Average)
EUI	29.80	13.10	27.93
# of Properties	140	16	4

There were no known retrofits reported in CoStar for the properties analyzed in 2019.

ESA program participation across the 160 properties (~3,525 units) is outlined in Figure 7. Approximately 61 percent of units across 160 properties have received ESA treatment since 2006.

Figure 7. PG&E ESA Program Participation by Year

Yr. last ESA treatment	# of units treated	# of properties
2006	196	32
2007	91	24
2008	153	38
2009	179	34
2010	72	35
2011	215	44
2012	117	28
2013	174	35
2014	194	54
2015	78	35
2016	47	21
2017	175	29
2018	115	25
2019	426	47

[5] CoStar only reports rentable property square footage, it does not include common areas.